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ABSTRACT

The potential impact of the implementation of cluster programs in trade and industrial/technical education in Colorado was examined through a review of literature on cluster programs in the United States, a national survey of 51 state supervisors of vocational education (VE), and a survey of 196 local vocational directors in Colorado. The national and state surveys elicited 34 (68.6% response rate) and 127 (65% response rate) usable responses. The state directors reported that cluster programs had been used in VE in 22 (64.7%) states and were accepted positively by industry and secondary- and postsecondary-level program personnel. Of the 52 (41.3%) local Colorado directors from districts where cluster programs had been used, more than 67% reported that cluster programs were achieving their intended outcomes (basic occupational and academic skill development and occupational awareness, preparation, and exploration). Local directors considered cluster programs more effective than traditional programs in supporting occupational/career decision-making processes and preparing individuals to work in a rapidly changing labor market. Appended are the following: questionnaires and cover letters used in the national and state surveys; information about clusters reported; and additional state supervisor comments.) Contains 35 tables/figures and 26 references. (MN)

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Potential Impact of the Implementation of Cluster Programs in Trade and Industrial/Technical Education in Colorado

Final Report

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Potential Impact of the Implementation of Cluster Programs in Trade and Industrial/Technical Education in Colorado

Final Report

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Chapter I

INTRODUCTION

This research report was prepared to describe activities which have been completed as a result funding received from a response to a "Request for Activities Concerning Cluster Programs" which was issued by the Vocational/Technical Manager, Trade and Industrial and Technical Education, Colorado Community College and Occupational Education System (CCCOES) on November 12, 1995. In this "Request . . ." it was stipulated that information and data were needed regarding model cluster programs as suggested by members of the State Technical Committee for Standards in Trade and Industrial/Technical Education.

Need

Information regarding cluster programs was considered to be important because of the changes which have occurred and are occurring throughout our society. Technological, political, industrial, and social changes resulted in a reduction of public support for many current public services including education as reflected by decreased budget allocations and increased concern about the job being done by schools. At the same time, there was an increased demand for qualified workers--individuals who not only possessed specific work skills related to an employment situations but who also possessed basic academic and human relations skills.

As a public supported activity, education has been asked to assume a greater and greater role in preparing individuals to meet the challenges of this changing world. Educators are not only being asked to provide direct educational activities to multiple populations including traditional students, incarcerated individuals, and individuals with special needs but to support the physical, mental, and moral well-being of the individuals with whom they had contact.

While change has always taken place, it is now occurring at a more rapid pace. Where individuals and organizations to which they belong such as unions once had much control over their own lives and livelihoods, existing conditions give much of that control to other entities. Industrial organizations are turning to downsizing as a means of controlling costs and/or directing growth. The Federal government which had provided a great deal of support to education, particularly vocational and technical education, is proposing new funding mechanisms such as those related to work-based learning which would have an impact on how educators perform their jobs. The public and its representatives are demanding more accountability on the part of educators plus more efficient and effective operation of educational endeavors.

Given this situation, many educational entities associated with vocational and technical education are examining the possibility of offering occupational preparation activities along with basic skills in a setting described as cluster programs. Migal (cited in Lozada, 1995, p. 29) stated that "In the cluster

approach, your job opportunities probably quadruple. It's a benefit to the industry and it's a benefit to the young person." The activities completed as part of this research effort consisted of two phases and are intended to provide a basis for suggesting the potential impact of implementing cluster programs as part of Colorado's Trade and Industrial and Technical Education programs.

Statement of the Problem

While change in Colorado's Trade and Industrial and Technical Education programs was, and is, inevitable, the nature of such change as it might impact program content and delivery can and should be done with care. This study was designed to investigate the potential impact of implementing cluster programs. Specifically, the problem identified to give direction to this study was:

> How should cluster programs be implemented in Colorado to promote the efficiency and effectiveness of Trade and Industrial and Technical Education offerings?

Research Questions

It was anticipated that completion of Phase I of this study would provide data which would serve as a basis for answering the following research questions relating to the status of cluster programs in the United States.

1. How is the cluster program concept being implemented in vocational education agencies throughout the United States?

2. What criteria are used when establishing/organizing cluster programs in vocational education agencies?

3. How is the cluster program concept being implemented in Trade and Industrial Education and/or Technical Education programs throughout the United States?

4. What are the intended outcomes (occupational awareness, occupational exploration, occupational preparation, and/or basic skills development, etc.) of cluster programs which have been implemented?

5. What types of support (consultation, curriculum funding, inservice activities, etc.) are provided for the implementation of cluster programs by personnel at the state level?

6. How do the results of cluster program offerings in Trade and Industrial Education and/or Technical Education compare with those of traditional occupational preparation programs?

7. How do(es) the purpose(s) of the same or similar clusters at the secondary and postsecondary levels differ?

8. What levels of acceptance of cluster programs have been shown by members of various groups?

9. What relationship is being established between/among cluster programs in Trade and Industrial Education and/or Technical Education and programs such as Technology Education and Applied Academics?

10. What criteria are used for selecting, preparing, and/or licensing (including certifying and credentialing) cluster program instructors?

11. What educational levels have been associated with the establishment of program articulation agreements?

A second set of research questions were formulated for Phase II of this study. Phase II was developed to provide data which would serve as a basis for answering the following research questions relating to the status of cluster programs in Colorado.

12. What level(s) of students are being served by vocational/technical education programs in Colorado schools/school districts?

13. How is the cluster program concept being implemented in vocational education agencies in Colorado?

14. What criteria are considered when establishing/organizing vocational/technical education cluster programs in Colorado?

15. What are the intended outcomes and actual outcomes (occupational awareness, occupational exploration, occupational preparation, and/or basic skills development, etc.) of cluster programs which have been implemented?

16. How is the cluster program concept being implemented in Trade and Industrial Education and/or Technical Education programs in Colorado?

17. What types of support or encouragement are provided for the development of junior high or middle school cluster programs by personnel at the school/school district level?

18. How do the results of cluster program offerings in Colorado Trade and Industrial Education and/or Technical

Education programs compare with those of traditional occupational preparation programs?

19. How do(es) the purpose(s) of the same or similar clusters at the secondary and postsecondary levels differ?

20. What levels of acceptance of cluster programs have been shown by members of various groups within your school/school district?

21. What relationship is being established between/among cluster programs in Trade and Industrial Education and/or Technical Education and programs such as Technology Education and Applied Academics?

22. What educational levels have been associated with the establishment of program articulation agreements?

Purpose of the Study

The purpose of this study was to provide recommendations to the Vocational/Technical Manager, Trade and Industrial and Technical Education, Colorado Community College and Occupational Education System, and to the Colorado State Technical Committee for Standards in Trade and Industrial/Technical Education regarding the potential process for and impact of implementing cluster programs in Colorado. Such information was perceived as being of value in determining whether, when, where, and how such implementation should take place and how the State might best support such implementation.

Definition of Terms

The following terms were defined as they were used in this research effort.

1. Cluster program--a field of study organized around careers with learning activities designed to impact both vocational preparation and basic academic skills so that an individual might choose from among several possible employment opportunities or choose to continue her/his education (Dykman, 1995).

2. Traditional program--a field of study organized around an occupational area with learning activities designed to impact the vocational preparation of an individual in a relatively narrow area and basic academic skills only as the latter relate to the specific occupational area so that an individual might seek employment within that area.

Chapter II

REVIEW OF RELATED LITERATURE

Introduction

The review of related literature presented in this chapter was divided into five general subdivisions.

1. **Search Process**--a discussion of the resources and procedures utilized in securing relevant information
2. **The Cluster Concept**--a description of the current situation for which the cluster concept is being considered plus definitions of cluster programs
3. **Related Initiatives**--other educational endeavors which are currently in favor with educators and which could have an impact on or be impacted by cluster programs
4. **Process for Introducing Change**--a review of one process which is being used to introduce curricular change
5. **Summary**--a summary of the findings of the literature review

Search Process

For the purpose of this study, the investigation of related literature was conducted using the facilities of the William E. Morgan Library, Colorado State University, Fort Collins, Colorado. The following computer network and CD-ROM systems were the primary resources used to gain access to bibliographical information used to identify sources of information used in the review.

1. Colorado Alliance of Research Libraries (CARL)--online catalog of titles and government documents available in Colorado State University's library system as well as several other library systems throughout Colorado and the nation

2. Dissertation Abstracts Ondisc (DAO)--data base of dissertations [Dissertation International Index (DAI)] and master's theses [Masters Abstract Index (MAI)] which have been completed

3. Educational Resources Information Center (ERIC)--data base containing reference information on numerous journal articles from journals cited in the Current Index to Journals in Education (CIJE) and other documents cited in the Resources in Education (RIE)

The following descriptors proved to be most effective for identifying related information when they were used in various combinations in searching the various data bases.

Career Education	Occupational Education
Cluster Programs	Technical Education
Curriculum Materials	Trade and Industrial Education
Instructional Materials	Vocational Education

The Cluster Concept

Maley (1975) reported that

> The cluster concept program . . . represents another option that is open to the designer of educational experiences in the broad field of vocational education. It is a concept that has found good and effective use in the vocational areas of trades and industry . . . There has been an increasing

> emphasis on the cluster approach as a result of efforts to bridge across traditional vocational lines and also to increase the employability of young people leaving the public secondary schools. (p. iii)

Though these comments were published in 1975, the individuals preparing this review of literature found that they could apply equally well to the current educational situation.

Dykman (1996) reported the following about one school in which educators were trying to bring about educational reform.

> . . . Their philosophy favored a broad career-oriented education over job-specific skill training.
>
> . . . "I think kids . . . want to learn a certain trade and are inclined to want to go to work right after high school," says a skeptical school board member.
>
> This is the central issue facing vocational education today. If it embraces "reform," will its niche be lost? Will "academic creep" lessen the time teachers have to teach job skills--or ultimately phase out the need for vocational teachers? Will students get frustrated?
>
> As the debate continues, one point educators cannot ignore is the economy. Many followers of the marketplace say the business world is evolving so rapidly that people can no longer count on just one set of job skills, no matter how well honed, to carry them through their working lives. . . . (p. 4)

One of the ways in which some of the perceived problems are being addressed is shifting to the use of cluster programs. Dykman (1995) wrote

> I was pleasantly surprised last January when I heard about the Fairfax County (Virginia) School District's brave new plan for secondary education. It said that *all* high

> school students soon would have to choose technical courses from one of four "clusters"--broad fields of study organized around careers--and that *all* graduates would have to show they've had some form of work-based learning and have made it through more advanced math and science classes. No more tracking to either college *or* work. (p. 6)

Fairfax County is not alone in this undertaking as Dykman reported that "Other school districts, such as those in Washington and Oregon, have been on this trajectory for several years" (p. 6).

One should realize, however, that as reflected by the quotation by Maley (1975) which introduces this section, the term cluster or cluster program is not new to vocational education. This point was emphasized by McCaleb (1973) when he wrote that ". . . the term cluster is not new to vocational education . . ." (p. 19).

Though the term is not new, the current level of emphasis on the use of cluster programs is at a higher level than it has been for many years. One of the situations which may have resulted in this current level of emphasis is passage of the Goals 2000: Educate America Act (1994) which established the National Skill Standards Board (NSSB) and outlined its functions. Hudelson (1996) wrote that

> The Goals 2000 legislation that created NSSB requires the board to pursue skill standards for "broad clusters of major occupations." . . .
>
> Judy Gray, executive director of the National Skill Standards Board, says Congress wanted standards for clusters of occupations rather than individual jobs "because by the

> time you have narrowly defined a job it's out of date." . . . (p. 12)

Maley (1975) provided more detailed reasons for using cluster programs when he wrote that

> The cluster concept . . . grew out of a sincere effort to develop a form of vocational preparation that would take into account such factors as: the mobility of people on a geographical basis, across occupational lines, and within industries; the need for optimum employability of the age group 18 to 24; the processes by which occupational or career decisions are made; and the need to have broad skills and understandings contributing to the adaptability of the worker in a rapidly changing labor market. The cluster program in vocational education was developed with full recognition of the existence of continuous education as an important component in the career ladder of many individuals. (p. iii)

Many of the characteristics that were concerns of those in vocational education also appeared in another educational endeavor--career education. Though career education as a phrase largely has been discounted and the phrase has taken on multiple meanings, the researchers believe the concept is alive and well under other rubric. Silvius and Bohn (1976) cited Worthington (1973) when he stated that

> Its [career education] main purpose is to prepare all students for successful and rewarding lives by improving their basis for occupational choice, by facilitating their acquisitions of occupational skills, by enhancing their educational achievements, by making education more meaningful and relevant to their aspirations, and by increasing the real choice they have among the many different occupations and training avenues open to them.

> It is similar to vocational education, but there is a fundamental distinction. For while vocational education is targeted at producing specific job skills at the high school, post-high school, and adult levels, up to but not including the baccalaureate level, career education embraces all occupations and professions and can include individuals of all ages whether in or out of school. (p. 7)

Silvius and Bohn (1976) indicated that

> . . . **most educators agree that career education is a lifelong process, reaching from pre-school thru adult and continuing education, including both formal and informal education.** Most will also agree that the process of choosing and preparing for a career includes developing **career awareness, exploration of career interests, and preparation for career entry.** (p. 7)

This process is depicted in Figure 1. Note that emphasis is placed on the concepts of career awareness, career exploration, and career preparation. Nystrom, Bayne, and McClellan (1977) suggested that one concept be added to that listing--orientation. They would sequence the concepts as follows: awareness; orientation; exploration; and preparation.

Definition of a Vocational Education Cluster Program

> The term cluster has been used to describe many different kinds of content organization associated with career education, vocational education, and various forms of skill groupings. Such variations in the use of the term makes it imperative that the particular use of the word cluster . . . be clarified . . . (Maley, 1975, p. 3)

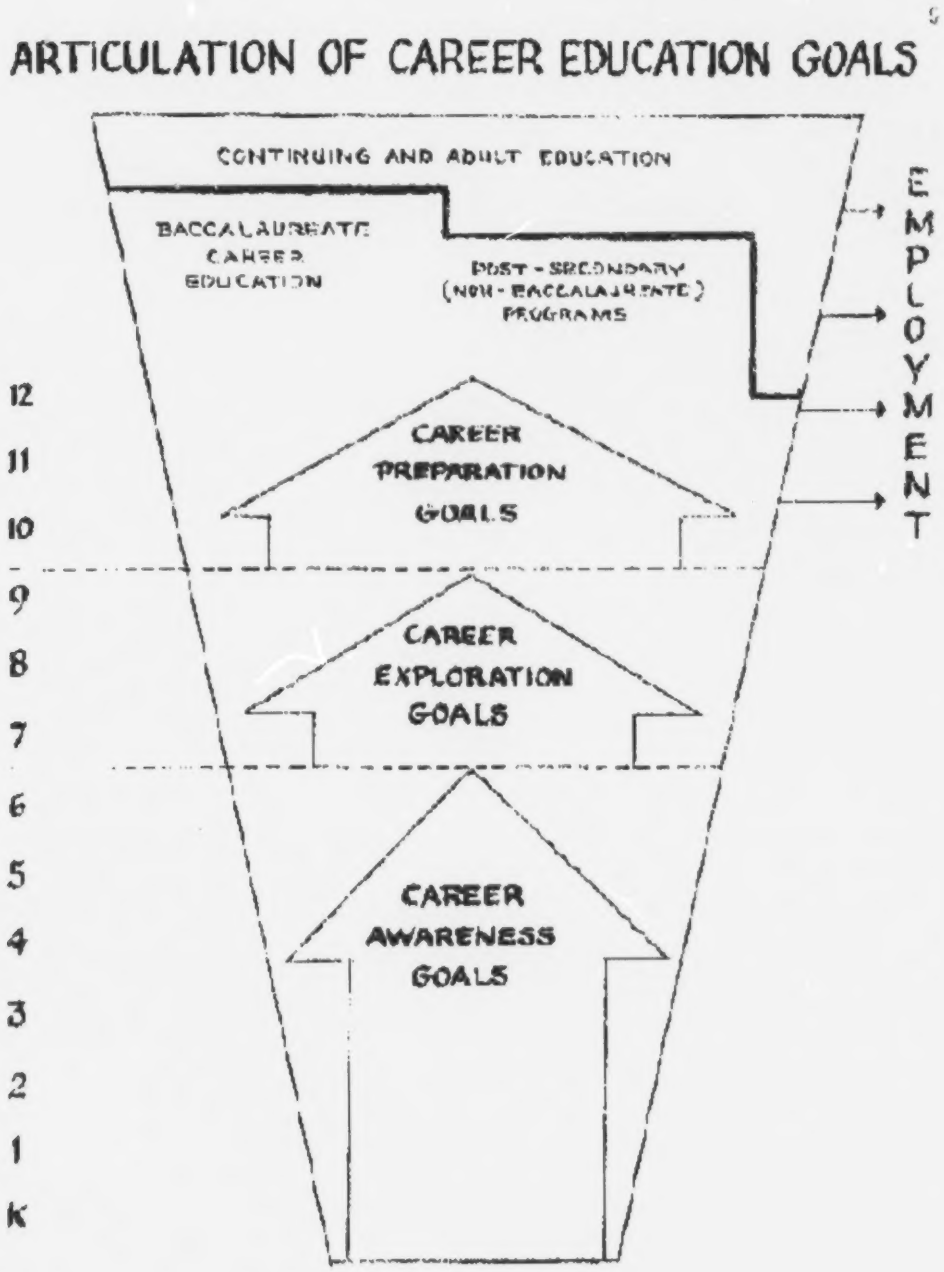

Figure 1. Model for Comprehensive Career Education Program*

* Developmental program goals for the comprehensive career education model, 1972, p. 5.

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Maley suggested that the cluster concept as a form of vocational education be defined as follows.

> The cluster concept . . . is a form of vocational education which prepares the individual to enter into gainful employment in a number of occupations which have sufficient commonalities in human requirements and kinds of work to permit a high degree of mobility within, as well as job entry into, the occupations associated with the cluster. . . . (p. 6)

Maley (1975) defined vocational education as

> . . . that form of education which enables the individual to enter into gainful employment--and to progress in that occupation or position. (p. 8)

He noted that

> The key emphases in this definition are on the phrases "to enter into gainful employment" and "to progress in" the occupation in which one is employed. (p. 6)

Areas of commonality between the two definitions presented by Maley were that both the traditional vocational education effort and the cluster vocational education program dealt with entering into gainful employment and with progressing in that occupation or position. Points of difference which he reported were "on the factors of depth-of penetration and breadth-of penetration" (p. 9.) He suggested that

> The cluster concept stresses the element of breadth as it bridges over into skills and information appropriate for a series of related occupations. The element of depth is minimal in the cluster and is usually confined to those first and second level skills required for job entry and performance on the job during the first six months.

> The traditional or *unit vocational program* is less concerned with breadth and bridging over into other occupations. This program normally concentrates on the element of depth in the single occupational category. (p. 9)

In contrasting the two program concepts--traditional vocational education programs versus cluster vocational education programs, Maley stated that

> It is necessary also to note that each of these programs is important and that it is not the intention of the author to dismiss one in favor of the other. Each plays a different function in the education program, and each is designed to serve the unique needs of different kinds of people. As a single example, the traditional vocational program with its stress on single occupational and in-depth preparation would appear to be suited to an individual who had reached the conclusion that the particular occupation was what he [she] wanted to pursue. On the other hand, there may be the student who has no definite single occupational commitment and he or she is interested in developing employable skills related to a broad area of employment such as construction, graphics, communications, etc. (p. 10)

Calhoun and Finch (1976) described what they referred to as cluster-based curriculum in the following manner.

> Through the years vocational education has tended to be organized around a single-occupation concept. That is, within a given vocational area, a student would select one occupation and follow a planned program in preparation for it. Today we live in an age that is characterized by mobility and the changing nature of jobs. Persons who are prepared with a broad base of skills that apply to more than one occupation tend to have more flexibility in adapting to the needs of the labor market. Thus, the cluster concept evolved as an alternative to the single-occupation concept.

> The cluster concept is based on the premise that certain occupations have common learning and skill requirements and that students who have mastered these skills have more employment options. There are critics, however, who point out that such an approach may not develop the depth required for specialized job performance in single occupations.
>
> During the 1960s, several projects were funded by the U. S. office of Education in which clusters were identified in areas such as building trades, child care, mechanical technology, merchandising, and office occupations. . . . (pp. 273-274)

Silvius and Bohn (1976) emphasized that "**clustering is an educational concept.**" They pointed out that

> . . . Occupations and professions are grouped so that students can be provided information about the world of work and be given assistance in choosing a career which matches interests, aptitudes, and abilities. Clustering also structures the instructional program, identifying objectives and learning experiences common to all the occupations and professions represented within the cluster.
>
> There is no single clustering arrangement which will meet the needs of all schools or districts. As a result, a number of systems are in use . . . (p. 12)

A cluster program was defined by Dykman (1995) as a field of study organized around careers with learning activities designed to impact both vocational preparation and basic academic skills so that an individual might choose from among several possible employment opportunities or choose to continue her/his education. Note that this definition introduces the concept that basic academic skills be addressed.

Functions of Cluster Programs

Maley (1975) suggested that cluster programs serve the following functions.

1. provide a broad field of employment opportunity for the individual

2. provide exploratory experiences--these experiences may be of two types--occupational exploration and self-exploration

3. provide direct occupational preparation

He stated that the functions of cluster programs varied with the goals of a particular program as well as the grade level at which a program was offered. For example, he noted that in industrial arts cluster programs, the emphasis was on general education objectives while vocational education cluster programs emphasized the individual's entrance into gainful employment.

On the other hand, he suggested that he would classify cluster programs at the middle school level as being "guidance-awareness clusters" whereas the high school cluster has a greater orientation toward an exploratory experience and occupational preparation. At the postsecondary level, he suggests that the cluster program be oriented toward the "continuation of development for most persons pursuing the cluster approach in their senior high school years." (p. 35) These various stages reinforce the career education stages presented in Figure 1 as well as the concepts--awareness; orientation; exploration; and preparation--suggested by Nystrom, Bayne, and McClellan (1977).

Even within a three-stage (grades 10, 11, and 12) vocational education cluster program Maley (1975) suggested that there be a shift in emphasis from one grade level to the next. For example, he suggested that a strong emphasis be placed on exploration and a limited emphasis on job entry skill and information development in grade 10. In grade 11, he suggested a narrowing of the exploratory function while major emphasis is placed on the development of job entry skills along with additional emphasis on employability. In grade 12, "The exploratory function is further diminished and there is a strengthened or increased emphasis on the developmental and the employment aspects of the program" (p. 51).

Functional Goals

Four functional goals of cluster programs were identified by Maley (1975).

1. The first of these goals is to broaden the base for initial employability of the student.

2. A second major goal of the cluster program is continuous employment.

3. A third major goal is to enable the individual to fit into established programs with some reasonable degree of understanding about what to expect on the job.

4. Another important goal of the cluster program is to enable the individual to take advantage of entrepreneurial possibilities growing out of the vocational preparation. (pp. 31-33)

Criteria Used as a Basis for Establishing/Organizing

Maley (1975) indicated that "It must be recognized that 'clusters' or 'clustering' in educational program development

have many and diverse forms" (p. 4). He suggested that clusters were created by concentrating on one or more of the following characteristics.

1. Multiple occupational preparation--This characteristic reflects the preparation of

> persons for employment in a number of different occupations.
>
> These occupations are generally related with respect to skills, human requirements, industries using such preparation, and cross-occupational mobility opportunities. Its central thrust is directed toward enabling persons to enter into several different occupations as opposed to the traditional emphasis on single in-depth occupational preparation. (p. 5)

2. Job entry preparation--A cluster formed on the basis of this characteristic

> has as its focus the enabling of the individual to gain entrance into employment and not (at the cluster stage) to develop in-depth trade or occupational competency. This is accomplished by having the individual develop job-entry capabilities in a number of related occupations. (p. 5)

3. Commonalities of content--This characteristics indicates that

> The development of an occupational cluster for vocational education purposes is based upon an analysis of content (related information) common to a number of otherwise related occupations. (p. 5)

4. Commonalities of skills and worker performance--Maley stated that "The occupations in a cluster normally contain a variety of fundamental mental and manual skills appropriate to each" (p. 5).

5. Prelude to further education--According to Maley, this characteristic indicated that

> The education and training experienced by the student represents a base level of preparation with the hope for more in-depth or specialized training to follow in the process of continuous education in either the *formal* or the *informal* setting. (p. 5)

6. Vocational preparation--This characteristic represents

> . . . a form of vocational education with the analyses, methodologies, procedures, and goals oriented toward the objective of gainful employment. The skills, information, and all other elements of the program are directed toward this objective. The student in such a program should have made the decision to enter into the particular cluster as a result of a great deal of self and experiential analysis. The decision should reflect a desire to pursue one or more occupational options represented in the cluster. (Maley, p. 6)

Maley wrote that

> Thus it is seen that the cluster approach is predicated on the proposition that industry, business, post-secondary schools, and the many other agencies involved in continuing education will take on the task of further development of the capabilities of the individual.
>
> The strong emphasis on this matter of post-secondary, continuing preparation might well be the key to generating a greater acceptance of, and participation in, the educational pursuits that relate to one's employment and/or upgrading in the job. Although the idea of continuous education has been voiced by numerous leaders in education and governmental circles, the idea of graduation, whether from high school or college, has meant for most individuals that they have completed their education. (p. 5)

Advantages and Disadvantages

Maley (1975) identified the following as advantages for implementing the vocational education cluster concept in a general laboratory facility.

1. The instruction in a cluster could be carried on by a single instructor.

2. The single general facility would be more feasible in terms of costs for a small school.

3. The teams of students working in each separate occupational area at a given time would be small, thus enabling a good deal of individual attention at the time of instruction.

4. The single general laboratory permits the employment of major group project instructional practices with a minimum of involvement with other laboratories or instructional personnel.

5. There would be good opportunities for flexibility in handling individual students with special problems that relate to a given occupational area. (p. 106)

The disadvantages identified by Maley (1975) were:

1. The demands upon the teacher are quite heavy, and it requires a unique type of person to handle the management and instruction in such a situation. Specific problems in this regard are as follows:
   a. Getting all groups started,
   b. Keeping each group on time and in line with its instructional needs,
   c. Maintaining order and keeping discipline at a minimum,
   d. Seeing to it that each student gets adequate attention and instruction, and
   e. Providing materials and activities for each individual and sub-group in accordance with their individual needs.

2. The teacher in this case would have to be versed in all of the occupational areas being taught in the cluster.

3. The problems of safety and discipline may be difficult for some instructors to handle.

4. The rotation between occupational areas would have to employ some system for providing for the numerous differences in learning rate and effectiveness among the students.

5. Evaluation of from four to six sub-groups made up of three or four students each would pose a severe problem for some teachers. (p. 107)

Value to Students

Maley (1975) suggested that in addition to having the opportunity to develop skills in a variety of occupations and the opportunity to develop basic understandings related to the work and nature of the trade, the following elements were of value to students who were involved in cluster programs.

1. The student learns to work with others in planning, executing, and evaluating.

2. The student works on a real and useful project that will be used, or perhaps even lived in, by persons in the future.

3. The group project affords excellent leadership experiences as well as opportunities for the exercise of responsibility in meaningful ways.

4. The student gets a first-hand experience in seeing how various occupations related to each other and are programmed to accomplish a given goal.

5. The group project may be self-subsidizing, as a salable product or service, thus permitting a school to do a great deal more than might be possible under normally limited budgets.

6. Many times the specific nature of the group project involves agencies and community groups outside of the school such as labor officials, various businesses, inspectors, and consultants; thus the student receives valuable experience in real working relationships.

7. The group project may involve experiences that would go beyond those that are established as class exercises in the usual laboratory setting. (pp. 108-109)

Potential Problems

Problems which might be associated with cluster programs, particularly those involving group projects, included the following:

1. There is a dire need for good organization.
2. Problems may arise with local public regulations and restrictions.
3. Problems may arise from union groups in the area.
4. The evaluation of individual student performance is considerably different and at times more difficult.
5. The need for responsible action is a constant issue on the part of all students.
6. The securing of materials and the disposing (sales or otherwise) of the product is a potential problem.
7. The developing of appropriate skill and related instruction strategies deserves constant attention. (Maley, 1975, pp. 109-110)

Selection of Instructors

According to Maley (1975), the key to the success of cluster programs lies in the teaching and instructional staff charged with the implementation of the program. He suggested the following qualities were considered desirable in selecting a teacher.

1. Educational Perspective--The teacher must have as a primary concern the development of people and the attitude that education is for and about people.
2. Flexibility--. . . refers to the ability of the teacher to deviate from traditional and standard practices in order to assume a new working role appropriate for the existing teaching circumstances.

3. Adaptability--may require the individual to adjust to and engage in whole new areas of preparation and student development.

4. Preparation and Experience--related to having broad experience and training related the trades involved in the cluster program.

5. Personal Organization--refers to the ability of the teacher to be able to develop and maintain an effective system of accounting for the performance and progress of each student. (adapted from pp. 173-178)

Teacher Education Programs for Instructors

Maley (1975) suggested that there are essentially three major areas of concentration in teacher education programs designed for individuals intending to work in cluster vocational education programs. These areas included:

1. Preparation in cluster point of view and the educational perspective associated with the concept of cluster programs in vocational education;

2. Preparation in the skill and content aspects of cluster programs; and

3. Preparation in the pedagogy related to the cluster program in the public schools. (p. 179)

Clusters Identified

The numbers of clusters identified for inclusion in any particular programmatic design and the names assigned to those clusters showed a wide variation as reflected in Maley's (1975) writings. When the U.S. Department of Health, Education and Welfare identified its fifteen career education clusters, only seven clusters--Public Service, Communications and Media, Manufacturing, Marine Science, Personal Services, Construction,

and Transportation--appeared likely to impact offerings made available through Colorado Trade and Industrial Education and/or Technical Education programs. On the other hand, eight of the nineteen clusters identified by the State Department of Education in Oregon--Food Service, Metals, Drafting, Graphic, Service, Electricity-Electronics, Industrial Mechanics, and Construction--were perceived as having such impact. Maley (1975) suggested a number of other clusters which were considered relevant by the reviewers but probably would not impact many of the situations which exist today. However, his point that forms of clusters have been developed around projects and business or entrepreneurial operations should receive consideration. For example, a project cluster developed around the building of a house might involve the following occupational components: carpentry; masonry; electrical; finishing; metalworking; business; and distribution. A business or entrepreneurial operation such as operating an automotive repair business might involve the following occupational components: general mechanic; body and fender; grease, lube and fuel; accounting; clerical; stock clerk; specialized mechanics to include ignition systems, fuel systems, transmission systems, and suspension systems; and car wash attendant.

Lozada (1995) reported that the number of clusters implemented in any one educational agency varied widely. For example, Great Oaks Institute of Technology and Career Development implemented an 11-group cluster matrix among its four

campuses. That matrix included "art, printing and communications; automotive and power; business and marketing; construction and maintenance; electronics; food and hospitality; health; manufacturing; personal care; plant and animal care; and safety" (p. 29).

On the other hand, Fairfax County (Virginia) School District will implement four clusters--communications and the arts; engineering, industrial and scientific technology; health, human and public services; and business and marketing--in the fall of 1996 (Lozada, 1995).

Bethel School District in Tacoma, Washington, introduced five career paths in 1990 (Lozada, 1995). Woodland High School in Woodland, California, has been implementing some version of career cluster for almost eight years and now offers six clusters (Lozada).

Thus no consistency was found for the numbers of clusters that were offered or in the names of those clusters. Both of these conditions seemed to be governed by local need, particularly student and business and industry needs.

Related Initiatives

Current educational initiatives which were believed to have a potential impact on the use of cluster programs were identified and are described below.

Applied Academics

Reynolds (1995) reported that Chew in 1993 defined applied academics as

> the presentation of subject matter in a way that integrates a particular academic discipline such as mathematics, science, or English) with personal workforce applications. [The academic disciplines] serve as the foundation for Tech Prep and are not watered-down courses. (p. 317)

He indicated that La Rocco (1993) suggested that students should have more control of independence with course materials while Kepner (1993) suggested that course material should be presented "from the concrete and specific to the abstract and general, from practical to theory, and from the familiar to unfamiliar . . ." (p. 317).

Career Academies

According to Hoerner and Wehrley (1995), "Career academies are simply schools within schools" (p. 30). The authors noted that "Career academies as an educational strategy have been around for centuries, but the majority of active models have been implemented in just the last decade" (p. 30).

The authors indicated that several defining characteristics of career academies were:

> It is a school within a school for grades 11 through 12, 10 through 12, or 9 through 12, run by a small team of teachers from various disciplines.
>
> It recruits students who volunteer for the program and demonstrate their commitment through an application process.

> It focuses on a career theme in a field in which demand is growing and good employment opportunities exist in the local labor market. The curriculum combines technical and academic content, usually through one technical and three academic classes each semester. Generic employability skills are also included. An academy keeps open students' options to attend college.
>
> Students are employed during the summer and (in some academies) part time during the school year in jobs related to their field of study.
>
> Employer representatives from the academy career field help plan and guide the program and are involved as speakers, field trip hosts, job supervisors, and sometimes mentors for individual students.
>
> Classes are smaller than is typical in the high school, a system of motivational activities and rewards, and regular contacts with parents contribute to students' sense of membership in a caring community.
>
> A mixture of outside funding . . ., district backing, and employer contributions supports the program. . . . (pp. 30-31)

Internships

Butterworth and Migliore (1989) stated that an internship is any type of carefully monitored work or service experience in which an individual has intentional learning goals and reflects actively on what he or she is learning throughout the experience. Hoerner and Wehrley (1995) indicated that

> . . . The theory of an internship is to spend time obtaining field experience, usually near the end of the formal education or training program. . . . Internships require jointly arranged field-based training between the business/industry career agency and the sponsoring educational agency. Such field-based internships provide actual hands-

> on experiences in the career setting under the supervision of a competent job supervisor (p. 39).

School-to-Work

Information presented in the article "Career Majors: Educating for a Flexible Work Force" (1996) indicated that section 4(5) of the legislation known as the School-To-Work Opportunities Act of 1994 requires "a coherent sequence of courses or field of study that prepares a student for a first job and that--

> (A) integrates academic and occupational learning, integrates school-based and work-based learning, establishes linkages between secondary schools and postsecondary educational institutions;
>
> (B) prepares the student for employment in a broad occupational cluster or industry sector;
>
> (C) typically includes at least two years of secondary education and at least 2 years of postsecondary education;
>
> (D) provides students, to the extent practicable, with strong experience in and understanding of all aspects of the industry the students are planning to enter;
>
> (E) results in the award of--
>
> (i) a high school diploma or its equivalent, . . .;
>
> (ii) a certificate or diploma recognizing successful completion of 1 or 2 years of postsecondary education (if appropriate); and
>
> (iii) a skill certificate; and
>
> (F) may lead to further education and training such as entry into a registered

> apprenticeship program, or lead to admission to a 2- or 4-year college or university." (p. 1)

Lewis (1996) indicated that school-to-work is aimed at preparing all students in the system for the world of work and for postsecondary education. She identified some of the possible activities as student businesses, job shadowing, mentoring, partnerships, apprenticeships, and others that help students develop skills with broad applications rather than narrow occupational skills.

Tech Prep

Hershey, Silverberg, and Owens (1995) discussed tech prep in their recent report, indicating that

> Tech-Prep reform concepts were developed over the past decade by educators and have now been incorporated into federal legislation. The Tech-Prep model was first clearly formulated and popularized by Dale Parnell (1985). It emphasizes creating *career pathways*, programs of study that link high school programs to advances technical education in community colleges and other institutions. These pathways would help high school students plan their studies to lead to a postsecondary credential in a high-skill, high-demand occupation, and avoid redundant course work. The model stresses the use of *applied academic curricula*--materials and instructional approaches that give students practical, hands-on ways to learn and apply concepts in math, science, and communications. In 1990, the Carl D. Perkins Vocational Education Act was amended by Congress; one amendment added Title IIIE, known as the Tech-Prep Education Act, which set forth seven elements that should be included in local Tech-Prep programs developed with the support of federal Title IIIE funds:
>
> 1. *Articulation Agreements.* Agreements between secondary and postsecondary institutions, to establish links between students' high school and higher education programs

2. *A 2 + 2 Design.* Including a common core of math, science, communications and technology in high school, followed by more advanced specialized courses in a four-year program sequence spanning high school and postsecondary study

3. *A Tech-Prep Curriculum.* Tailored to local student needs and institutional constraints

4. *Joint Staff Development for Secondary and Postsecondary Instructors.* To promote cooperation and maximize the "seamlessness" of overall curriculum content for students making the transition from high school to postsecondary study

5. *Training for Secondary and Postsecondary Counselors.* Training on how to attract students to Tech-Prep, promote retention, and guide students to career employment

6. *Measures to Ensure Access.* For special populations such as minorities and at-risk students

7. *Preparatory Services.* Services such as recruiting, counseling, and assessment, to help students understand Tech-Prep and make decisions about program of study and career direction

Hoerner and Wehrley (1995) described tech prep as follows:

> Tech Prep means different things to different people. It is not necessarily a four-year program that must lead to an associate's degree. Tech Prep does not even have to involve a community college. The law calls for two years of postsecondary education, which could include either an associate degree, apprenticeship, or a university that offers a two-year postsecondary certificate. Tech Prep is not exclusively for high-tech occupations. The Carl D. Perkins Act in section 347(3) defines Tech Prep in the following way:

> [T]he term tech-prep education program means a combined secondary/postsecondary program . . . consist(s) of 2 [or 4 years as amended by STWOA, 1994] years of secondary . . . and 2 years of higher education, or an apprenticeship program of at least 2 years following secondary instruction with a common core of required proficiency in mathematics, science, communications, and technologies designed to lead to an associate degree or certificate in a specific career field . . . and leads to ". . . effective employment placement or transfer of students to 4-year baccalaureate degree programs. . . ." (*Congressional Record*, 101st Congress, 2nd Session, September 25, 1990, pp. 790-791) (pp. 41-42)

The technologies portion of Tech Prep consists of career clusters. For example, in Virginia there are five career clusters: (1) Agriculture, Environment, and Natural Resources; (2) Business and Marketing; (3) Health, Human, and Public Services; (4) Engineering and Industrial Technologies; and (5) Communications, Arts, and Media. These hands-on occupationally specific clusters integrate academic knowledge into applied courses. (p. 42)

Technology Education

According to Erekson and Herschbach (1991),

> The term 'Technology Education' means an applied discipline designed to promote technological literacy which provides knowledge and understanding of the impacts of technology including its organizations, techniques, tools and skills to solve practical problems and extend human capabilities in such areas as construction, manufacturing, communications, transportation, power, and energy. (p. 16)

The authors noted that this definition acknowledged the transformation from industrial arts to technology education and reinforced the experiential nature of technology education by identifying it as an applied discipline.

Process for Introducing Change

The introduction of programs as replacements for traditional programs or as initial programs requires certain changes in curriculum and instruction. Hershey, Silverberg, and Owens (1995) suggested that the following steps represented a start in bringing about such changes for tech prep.

(1) creating a team of academic teachers for Tech-Prep students;

(2) introducing applied and occupationally relevant material in academic classes;

(3) creating increased cooperation between academic and occupational instructors;

(4) developing the new technical curricula; and

(5) involving activity. (pp. 14-15)

The authors indicated that one of the institutions they had visited had formed a team consisting of four teachers--math, science, English, and employability skills teachers--to work with students in one of the technical areas.

Summary

Information related to the utilization of clusters which was considered to be important in relation to the current study is outlined below.

1. Cluster programs are being used with success in today's educational settings.

2. The primary goal of cluster programs should be to prepare individuals for entry into gainful employment.

3. Individuals preparing cluster programs must be mindful of concerns over the elements of "breadth" and "depth" as they impact program contents.

4. Individuals preparing cluster programs must recognize that the intents and contents of such programs are impacted by the grade levels of the participants and the program goals.

5. Individuals preparing cluster programs should prepare a listing of criteria to be used in determining the program contents.

6. When preparing cluster programs, consider the impact which they will have on other program initiatives such as applied academics and school-to-work and the impact which other initiatives will have on the cluster programs.

7. Individuals implementing cluster programs should be conscious of the relationship of the cluster with other educational offerings so as to facilitate opportunities for career awareness, career orientation, career exploration, and career preparation.

8. Individuals implementing cluster programs should recognize the role of such programs in lifelong learning.

9. Instructors for cluster programs should be selected with care as the operation of such programs entails problems not generally found in traditional programs.

10. Each educational agency must decide on the numbers and types of clusters required to meet the needs of its students.

11. When introducing new cluster programs or revisions to existing programs, use a planned process such as the one suggested by Hershey, Silverberg, and Owens (1995).

Chapter III

RESEARCH METHODS

Introduction

To answer the research questions regarding the status of cluster programs in vocational education and in Trade and Industrial Education and Technical Education, the following procedures were used to guide this study. The procedures were developed so as to facilitate the collection of data from individuals representing the individual states (Phase I) and from directors of vocational programs in Colorado (Phase II).

Because of the nature of the study, it was divided into two phases. Phase I included the review of the literature on cluster programs, the identification of key individuals representing the various states that would be included in the data collection process for the study, the preparation of a data gathering instrument, the mailing of the instruments to the state supervisors/agencies, and compiling the data and the reporting of the findings of this phase of the study.

Phase II included the identification of individuals within the state of Colorado who were to be surveyed (local vocational directors), the preparation of a data gathering instrument, the mailing of the instruments to Colorado local vocational directors, and the compiling of the data and the reporting of the findings of this phase of the study.

It was anticipated that the completion of the procedures described above would provide the information and recommendations that will enable individuals in leadership positions within the state agency to make decisions regarding the future implementation of cluster programs in Colorado. Included in the recommendations of this report will be the elements needed for the professional development of selected Trade and Industrial Education and/or Technical Education teachers and the needed background information for future inservice activities. This report will describe in detail the activities and results related to Phases I and II but will only contain recommendations related to Phase III, the planning for the further implementation of cluster programs in Colorado.

Phase I: Status of Trade and Industrial Education and/or Technical Education Cluster Programs in the United States

The review of literature was initiated in December 1995 and was described in Chapter II. The review of literature provided the foundation for the development of the survey instrument. The researchers also met with the Vocational/Technical Manager, Trade and Industrial and Technical Education, Colorado Community College and Occupational Education System (CCCOES) to discuss the elements that should be addressed in the study.

The first draft of the survey instrument was reviewed with the Vocational/Technical Manager and the Colorado State Technical Committee for Standards in Trade and Industrial/Technical Education. Suggested revisions were made in the instrument and

the final version of the instrument was prepared and is contained in Appendix A. It should be noted that the actual instrument was formatted so its size was 7 inches by 8 1/2 inches. Copies of the instrument were made and prepared for mailing to the appropriate individuals in the various states.

Individuals representing the vocational agencies in the fifty states and the District of Columbia were identified as those to receive the survey instrument. In general, the researchers attempted to identify those individuals in the various states who were responsible for the supervision of Trade and Industrial and/or Technical Education programs. In some cases these individuals were not classified as state supervisors but were curriculum coordinators or consultants associated with Trade and Industrial Education and/or Technical Education programs.

The primary sources of information used in compiling the list of individuals were the listings of the state directors and the state supervisors in the September 1995 issue of Tech Directions (Directory, 1995). The researchers discovered that there were problems in using these lists. It was often not clear from the sources who the most appropriate individual was to complete the survey. In those instances, the state director of vocational education was contacted and asked to forward the instrument to the appropriate individual.

In all, copies of the instrument were sent to 51 individuals along with a cover letter. The original mailing was handled by

the Colorado Vocational/Technical Manager, Trade and Industrial and Technical Education, Colorado Community College and Occupational Education System (CCCOES).

The researchers contacted non-respondents via mail or by telephone. A copy of the letter used in contacting the non-respondents is included in Appendix B. Telephone calls were made to the state agencies of the non-respondents to determine if the original mailings were directed to the proper individuals. A corrected list of addresses was prepared and the follow-up letter was sent.

Of the 51 state representatives contacted, completed survey instruments were received from 35 individuals for a usable return rate of 68.6 percent. In addition, a representative from one other state contacted one of the researchers and reported that because of a current shortage of resources, no one instate would be able to complete the instrument.

The responses received on the 35 returned surveys were coded and entered into a computer data base. The data were then analyzed using the Statistical Package for the Social Sciences (SPSS). A written analysis of the data from the states was completed and is presented in Chapter IV of this document.

Phase II: Status of Trade and Industrial Education and/or Technical Education Cluster Programs in Colorado

A second mail questionnaire was prepared to collect information from local directors of vocational education in Colorado. Following completion of an original draft of the instrument,

which was developed from input on the instrument used in Phase I of the study, the questionnaire was reviewed by the researchers. Following revisions, the draft instrument was submitted to the Colorado Vocational/Technical Manager, Trade and Industrial and Technical Education, Colorado Community College and Occupational Education System (CCCOES) who suggested further revisions. The instrument was then reviewed by one local vocational administrator in Colorado whose institution offered cluster programs. Final changes were then made the instrument. A copy of the finalized instrument is included in Appendix C. It should be noted again that the actual instrument was formatted so its size was 7 inches by 8 1/2 inches.

The next step was to identify the individuals representing the vocational institutions in Colorado. The names of the 196 individuals to be contacted were obtained from the Colorado Vocational/Technical Manager, Trade and Industrial and Technical Education, Colorado Community College and Occupational Education System (CCCOES).

Copies of the survey instrument were sent to the 196 individuals along with the cover letter included in Appendix D. The original mailing procedure was handled by the Colorado Vocational/Technical Manager, Trade and Industrial and Technical Education, Colorado Community College and Occupational Education System (CCCOES).

The researchers sent out a follow-up survey instrument to non-respondents and contacted some of them by telephone. A copy

of the letter used in contacting the non-respondents is included in Appendix D.

Of the 196 local representatives contacted, completed forms were received from 127 individuals for a usable return rate of 65 percent. Responses reported on the 127 returned forms were coded and entered into a computer data base. The data were then analyzed using the Statistical Package for the Social Sciences (SPSS). A written analysis of the Colorado local vocational agency data was completed and is presented in Chapter IV of this document.

Phase III: Professional Development Activities

Phase III of the project was perceived as being dependent upon the outcomes of Phases I and II and the availability of funds to plan and conduct the Professional Development activities for Colorado teachers of Trade and Industrial Education and/or Technical Education. If results from the two phases described above warrant, recommendations relating to the following activities will be made as an extension of this study:

1. Determine the elements to be included in future professional development activities for Colorado Trade and Industrial Education and/or Technical Education teachers and local vocational directors.

2. Recommend a structure for professional development activities for teachers and/or local vocational directors.

Summary

Data were collected from individuals in the various states who were responsible for the supervision of Trade and Industrial and/or Technical Education programs and from local directors of vocational education in Colorado as described for Phases I and II above. When the data were coded and analyzed, narrative summaries were prepared and are included as Chapter IV of this report. While the recommendations found in Chapter V contain some information relevant to Phase III, the primary focus of this written report was directed to Phases I and II.

Chapter IV

FINDINGS

Introduction

The findings of this research are based upon the data collected from the respondents in Phases I and II of the study. The findings for Phase I represent the information collected from the state supervisors of Trade and Industrial Education and Technical Education programs. The findings for Phase II represent the information collected from the local directors of vocational programs in Colorado.

Findings for Phase I

State supervisors of Trade and Industrial Education and/or Technical Education programs from throughout the United States were asked to complete a survey during February and March of 1996. The supervisors were asked to provide information relative to the utilization of cluster programs in their respective states. The information presented herein was organized into two major components--the first related to why cluster programs had not been implemented in some states and the second presenting information related to the usage of cluster programs in certain states. Completed instruments were received from supervisory personnel representing 35 agencies.

Research Question 1

How is the cluster program concept being implemented in vocational education agencies throughout the United States?

A summary of the responses to the question of whether cluster programs were being used in the individual states is contained in Table 1. Of the 34 responding state supervisors, 12 or 35.3 percent indicated that cluster programs had not been used in vocational education in their states. Twenty-two, or 64.7 percent, of the respondents reported that cluster programs had been used in vocational education programs in their states. Responses from the first of these two groups will be described in the following section while information in the section following that one will be based on responses from the second group of respondents.

Table 1: State Supervisors Reporting Whether Cluster Programs Have Been Used for Vocational Education Programs in Their States (N=34)

Response	f	%
No	12	35.3
Yes	22	64.7

Those 12 individuals who indicated that cluster programs had not been used in their states' vocational education programs were asked to indicate the reasons why they had not been used. Their

responses are summarized in Table 2. Note that the reason identified by the largest number of educators was that "educational personnel are not prepared to make the transition from traditional programs to cluster programs." While 50 percent of the respondents identified this as a reason, there was no one reason that seemed to deter the utilization of cluster programs.

Table 2: State Supervisors Reporting Reasons Why Cluster Programs Had Not Been Used for Vocational Education Programs (N=12)

Reason	f	%
Educational personnel are not prepared to make the transition from traditional programs to cluster programs.	6	50.0
Traditional programs are working fine.	4	33.3
Educational facilities available will not support cluster programs.	3	25.0
Non-educational personnel such as employers do not support this preparation concept.	2	16.7
Too many resources required to implement cluster programs.	2	16.7
Local control of schools impacts utilization of cluster programs.	1	8.3

These same individuals were asked to indicate whether personnel in their states were planning to implement vocational cluster programs within the next two years. As shown in Table 3,

50 percent of the respondents indicated that such implementation was being considered. Thus there seemed to be general support for the utilization of cluster programs in the vocational education delivery system.

Table 3: Supervisors Reporting Whether States Were Planning to Implement Vocational Cluster Programs Within the Next Two Years (N=12)

Response	f	%
No	6	50.0
Yes	6	50.0

Research Question 2

What criteria are used when establishing/organizing cluster programs in vocational education agencies?

The 22 respondents who indicated that their states had been using cluster programs for vocational education programs were asked to identify the criteria which were considered when establishing/organizing vocational education cluster programs. Information presented in Table 4 indicated that the four criteria identified by over 50 percent of the respondents were:

1. Content commonalities/relationships reflected through an analysis of content (related information) common to a number of otherwise related occupations;

Table 4: Criteria Considered When Establishing/organizing Vocational Education Cluster Programs (N=22)

Criterion	f	%
A base level of preparation as reflected by the education and training to be experienced by each learner serving as a basis for more in-depth or specialized training to follow in the process of continuous education in a formal educational setting	17	77.3
Content commonalities/relationships reflected through an analysis of content (related information) common to a number of otherwise related occupations	17	77.3
Skill and worker performance commonalities as reflected by the inclusion of a variety of fundamental mental and manual skills appropriate to each of several occupations	14	63.6
Multiple occupational preparation as reflected by the goal of preparing persons for employment in a number of different occupations related with respect to skills, human requirements, industries using such preparation, and cross-occupational mobility opportunities	13	59.1
A base level of preparation as reflected by the education and training to be experienced by each learner serving as a basis for more in-depth or specialized training to follow in the process of continuous education in an informal educational setting	8	36.4

(table continues)

Criterion	f	%
Job entry preparation as reflected by focusing on enabling an individual to gain entrance into employment and not to develop in-depth trade or occupational competency in a number of related occupations	8	36.4
Availability of qualified educational personnel to operate programs	5	22.7
Availability of existing instructional materials from other states or agencies	2	9.1
Programs designed to serve as a bridge between exploratory and in-depth programs or to facilitate cross-occupational mobility	1	4.5
National occupational profiles used in establishing and or organizing cluster programs	1	4.5

2. A base level of preparation as reflected by the education and training to be experienced by each learner serving as a basis for more in-depth or specialized training to follow in the process of continuous education in a formal educational setting;

3. Skill and worker performance commonalities as reflected by the inclusion of a variety of fundamental mental and manual skills appropriate to each of several occupations; and

4. Multiple occupational preparation as reflected by the goal of preparing persons for employment in a number of different occupations related with respect to skills, human requirements,

industries using such preparation, and cross-occupational mobility opportunities.

Research Question 3

How is the cluster program concept being implemented in Trade and Industrial Education and/or Technical Education programs throughout the United States?

Those individuals who reported that cluster programs had been used for vocational education programs in their states were then asked whether cluster programs had been used for Trade and Industrial Education and/or Technical Education programs. As shown in the information presented in Table 5, only one of the 22 respondents indicated that cluster programs had not been used for Trade and Industrial Education and/or Technical Education programs. The 21 respondents who indicated that such programs had been used were asked to respond to a series of items dealing with the utilization of cluster programs in Trade and Industrial Education and/or Technical Education programs.

Table 5: State Supervisors Reporting That Cluster Programs Have Been Used for Trade and Industrial Education and/or Technical Education Programs in Their States (N=21)

Response	f	%
No	1	4.5
Yes	21	95.5

Research Question 4

What are the intended outcomes of cluster programs which have been implemented?

When asked to identify the intended outcomes for implementing cluster programs, the respondents replied as shown in Table 6. The three outcomes identified by over 50 percent of the supervisors were basic occupational skill development, occupational preparation, and occupational exploration. Thus, it appeared that the emphasis in utilizing cluster programs was placed on preparation for work as was true for traditional vocational education programs.

Table 6: State Supervisors Reporting the Intended Educational Outcomes for Implementing Cluster Programs (N=21)

Intended Educational Outcome	f	%
Basic occupational skill development	17	80.9
Occupational preparation	16	76.2
Occupational exploration	12	57.1
Advanced occupational skill development	10	47.6
Basic academic skill development	10	47.6
Occupational awareness	9	42.8

Research Question 5

What types of support are provided for the implementation of cluster programs by personnel at the state level?

Those supervisors who reported that cluster programs had been used for Trade and Industrial Education and/or Technical Education programs were asked to identify the types of support provided by state level personnel to those individuals responsible for implementing cluster programs. As shown in Table 7, the four types of support reported by at least 50 percent of the respondents were consultation, curriculum, funding, and inservice activities. These results were perceived as indicating that personnel in most of the states represented by the

Table 7: State Supervisors Reporting the Types of Support Provided by State Level Personnel to Those Individuals Responsible for Implementing Cluster Programs (N=21)

Type of Support	f	%
Consultation	20	95.2
Inservice activities	14	66.7
Curriculum	13	61.9
Funding	13	61.9
Arrange business and industry partnerships	1	4.8
Assist with student organizations, program frameworks, and standards	1	4.8

respondents recognized cluster programs as a positive delivery technique.

In an attempt to determine what types of clusters were present in the various states, the researchers asked the state supervisors completing the research instrument to list the names of the Trade and Industrial Education and Technical Education cluster programs offered in their respective states and to indicate whether the clusters were active at the junior high or middle school level, the secondary level, or the postsecondary level. The responses from the 20 supervisors who completed this part of the instrument are summarized in Table 8. A more detailed presentation of their responses is included in Appendix E.

The responses confirmed what the review of literature had indicated--that various names were being assigned to clusters which might be very similar in purpose and content. While there is nothing inherently wrong with this, it made consolidation of the data somewhat difficult. To secure a true picture as to the extent of commonalities across states--and possibly, even within states, for one supervisor indicated that the names of the cluster were highly variable--listings of the occupations around which they were designed or of the learning activities included would have been helpful.

However, using only the researchers' interpretations of the titles, the summary presented in Table 8 was prepared. Note that all cluster program names identified by the supervisors as being

Table 8: State Supervisors Reporting the Names of the Trade and Industrial Education and/or Technical Education Cluster Programs Offered in Their States and the Grade Levels at Which Such Program Were Offered (N=20)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Agriculture			1	5.0		
Agribusiness			1	5.0		
Arts and Humanities			1	5.0		
Accounting Technology			1	5.0	1	5.0
Arts, Media, and Communication			1	5.0	1	5.0
Aviation-Air Ways Science			1	5.0		
Building Maintenance			1	5.0		
Business and Marketing			1	5.0		
Business/Information/ Computer Technology			1	5.0		
Business Management and Finance			1	5.0	1	5.0
CAD-CAM			1	5.0	1	5.0
Communication			11	55.0	4	20.0
Construction	1	5.0	17	85.0	8	40.0
Construction Mechanics			1	5.0		
Consumer Service, Technology			2	10.0	1	5.0

(table continues)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Education			1	5.0		
Electricity/electronics			1	5.0		
Electromechanical Technology			1	5.0		
Electronics	1	5.0	4	20.0	3	15.0
Engineering			4	20.0	3	15.0
Environmental and Natural Resource Systems			1	5.0	1	5.0
Exploring Technology Systems	1	5.0				
Health			2	10.0	1	5.0
Human Services			2	10.0	1	5.0
Industrial Maintenance			2	10.0	1	5.0
Industrial Mechanics			1	5.0		
Industrial Technology	1	5.0	2	10.0		
Introduction to Trades and Industry			1	5.0		
Maintenance Technology			1	5.0	1	5.0
Manufacturing	1	5.0	9	45.0	6	30.0
Mechanics			3	15.0	2	10.0

(table continues)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Media and Communications			1	5.0		
Metals (Machining, Sheet Metal, and Welding)			3	15.0		
Mining			1	5.0		
Office Technology			1	5.0	1	5.0
Personal and Miscellaneous Services			1	5.0	1	5.0
Power Mechanics			1	5.0		
Precision Production Trades			1	5.0	1	5.0
Production Industries Technology			1	5.0		
Public Services			2	10.0	1	5.0
Science and Math			1	5.0		
Social Sciences			1	5.0		
Technical/Mechanical Services			1	5.0		
Technical Preparation	1	5.0	4	20.0	1	5.0
The Company			1	5.0		

(table continues)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Transportation	1	5.0	16	80.0	10	50.0
Visual and Performing Arts			1	5.0	1	5.0

associated with Trade and Industrial Education and Technical Education were included. No attempt was made by the researchers to determine if the inclusion of a particular cluster name was appropriate or inappropriate.

One should note from the information presented that there were a wide variety of clusters offered though the primary level at which they were offered was the secondary level. Only three clusters--communication, construction, and transportation--were offered in over 50 percent of the states at a single educational level--secondary. This was expected as the review of literature indicated that many cluster programs were used for exploratory purposes to better prepare individuals to continue their preparation at another level.

Research Question 6

How do the results of the cluster program offerings in Trade and Industrial Education and/or Technical Education compare with those of traditional occupational preparation programs?

The state supervisors were asked to indicate how the results of cluster program offerings in their states compared with those of traditional occupational preparation programs. While six of the respondents indicated that more data were needed before the results of such programs could be clearly established, all responses are summarized in Table 9. It should be noted that only one response, "provide better support for the processes through which individuals make occupational or career decisions" was specified by over 50 percent of the respondents. Thus the major contribution perceived to come from cluster programs appeared to be in the area of career guidance.

Research Question 7

How do(es) the purpose(s) of the same or similar clusters at the secondary and postsecondary levels differ?

The supervisors were asked to indicate whether there was a difference between the purpose(s) of the same or similar clusters at the secondary and postsecondary levels. While the respondent from one state indicated that there were no postsecondary programs upon which to base a response, other supervisors responded as shown in Table 10.

Over 50 percent of those individuals responding indicated that there was no difference in the purpose(s) of clusters at the secondary and postsecondary levels. However, the other respondents indicated that there was a difference with the cluster programs at the postsecondary level being very occupationally specific while secondary programs do not have the

Table 9: State Supervisors Reporting How the Results of Cluster Program Offerings Compare With Those of Traditional Occupational Preparation Programs (N=21)

Response	f	%
Provide better support for the processes through which individuals make occupational or career decisions	14	66.7
Provide better preparation of the individual to work in a rapidly changing labor market	10	47.6
Prepare students for success in more employment settings	9	42.8
Result in greater student interest and/or acceptance	9	42.8
Provide better support for the concept that continuous education [lifelong learning] is an important component in the career ladder of many individuals	7	33.3
Result in higher job placement rates	5	23.8
Result in greater employer support	4	19.0
Industry personnel generally like the concept of cluster programs but do not like the student/employee that does not have strong indepth knowledge and skills	1	4.8
Enables smaller schools to offer students a "broad-based" exploration program into technology	1	4.8

means to be as occupationally specific as postsecondary programs. Representatives from two states reported that secondary programs

Table 10: State Supervisors Reporting Whether There are Differences Between the Purposes of the Same or Similar Clusters at the Secondary and Postsecondary Levels (N=18)

Response	f	%
No	10	55.6
Yes	8	44.4

are more of an exploratory type program while postsecondary programs are oriented for job preparation. A supervisor from one state noted that secondary programs are used for preparing students to enter postsecondary vocational programs.

The researchers asked themselves if individuals in the two response groups really disagreed to the extent the data seemed to indicate. If, as an earlier set of responses indicated, the supervisors believed that one of the major results of cluster program offerings was to "provide better support for the processes through which individuals make occupational or career decisions," then this variation in responses may not be important. The respondents might have anticipated that more traditional programs would be available to enhance overall job preparation.

Research Question 8

What levels of acceptance of cluster programs have been shown by members of various groups?

In an effort to get a measure as to the level of acceptance of cluster programs shown by educators including vocational and technical instructors, vocational directors, principals and others in the various states, the supervisors were asked to mark one point on a scale divided into six segments. A summary of the responses as categorized by the researchers is shown in Table 11. While the responses varied across the scale values, the mean of 3.0 was interpreted as indicating that the supervisors perceived that there was a positive level of acceptance by the educators.

Table 11: State Supervisors Reporting Various Levels of Acceptance of Cluster Programs by Educators in Their States (N=21)

Scale Value	f	%
1 (High)	4	19.0
2	4	19.0
3	5	23.8
4	3	14.3
5	5	23.8
6 (Low)	0	0.0

Another item was designed to solicit the level of acceptance of cluster programs shown by industry personnel. The supervisors were asked to indicate the level of acceptance they perceived by

marking one point on a scale divided into six segments. A summary of the responses as categorized by the researchers is shown in Table 12. While the responses varied across the scale values, the mean of 3.0 was interpreted as indicating that the supervisors perceived that there was a positive level of acceptance by the industry personnel.

Table 12: State Supervisors Reporting Various Levels of Acceptance of Cluster Programs by Industry Personnel (N=21)

Scale Value	f	%
1 (High)	3	14.3
2	6	28.6
3	3	14.3
4	7	33.3
5	1	4.8
6 (Low)	1	4.8

Another item was designed to solicit the level of acceptance of cluster programs shown by postsecondary program personnel. The supervisors were asked to indicate the level of acceptance they perceived by again marking one point on a scale divided into six segments. A summary of the responses as categorized by the researchers is shown in Table 13. While the responses varied across the scale values, the mean of 3.2 was interpreted as indicating that the supervisors perceived that there was a

positive level of acceptance by the postsecondary program personnel.

Table 13: State Supervisors Reporting Various Levels of Acceptance of Cluster Programs by Postsecondary Program Personnel (N=17)

Scale Value	f	%
1 (High)	2	11.8
2	4	23.5
3	3	17.6
4	4	23.5
5	4	23.5
6 (Low)	0	0.0

Research Question 9

What relationship is being established between/among cluster programs in Trade and Industrial Education and/or Technical education and programs such as Technology Education and Applied Academics?

In an attempt to determine how cluster programs in Trade and Industrial Education and Technical Education were being utilized in connection with such current efforts as Applied Academics, School-to-Work, and Technology Education, the supervisors were asked to respond to a series of statements. Their responses were summarized and are presented in Table 14.

It should be noted that there is strong support for relationships being established between cluster programs and the various programs identified in the several items. Over 50

Table 14: State Supervisors Reporting Relationships Which Were Established or Being Established Between/among Cluster Programs in Trade and Industrial Education and/or Technical Education and Programs Such as Applied Academics, School-to-Work, and Technology Education (N=20)

Relationships	f	%
Completion of a Technology Education program is recommended as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.	13	65.0
Completion of a Technology Education program is required as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.	2	10.0
Completion of an Applied Academics program (i.e., *Applications in Biology/Chemistry, Applied Communication, Applied Mathematics, Principles of Technology*) is recommended as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.	10	50.0
Completion of an Applied Academics program (i.e., *Applications in Biology/Chemistry, Applied Communication, Applied Mathematics, Principles of Technology*) is required as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.	1	5.0

(table continues)

Relationships	f	%
It is recommended that cluster Trade and Industrial or Technical Education programs be included as one component of the state's School-to- Work system.	13	65.0
It is required that cluster Trade and Industrial or Technical Education programs be included as one component of the state's School-to- Work system.	3	15.0
Completion of an Applied Academics program is a required part of the cluster program not a prerequisite to the program.	3	15.0
Completion of a Technology Education program is a graduate requirement for all students.	1	5.0
Completion of a Technology Education program is required of all students in middle school.	1	5.0
Completion of an Applied Academics program is recommended along with a cluster program.	1	5.0
No relationship has been established.	0	0.0

percent of the supervisors indicated that Technology Education and Applied Academics were recommended as prerequisites for one entering a cluster program. In addition, over 50 percent of the respondents reported that cluster programs be included as one components of the state's School-to-Work system.

One of the situations which the items on the instrument failed to address was those programs which participants should undertake concurrently. If there had been more items addressing this type of situation, a clearer picture of the relationships might have been obtained.

Responses provided by the supervisors regarding an item in which they were asked if their state agencies responsible for the supervision of Trade and Industrial Education or Technical Education programs support or encourage the development of junior high or middle school cluster programs are summarized in Table 15. Sixty-five percent of the respondents indicated that their state agencies supported or encouraged the development of such cluster programs.

Table 15: State Supervisors Reporting Whether Their State Agencies Responsible for the Supervision of Trade and Industrial or Technical Education Programs Support or Encourage the Development of Junior High or Middle School Cluster Programs (N=20)

Response	f	%
No	7	35.0
Yes	13	65.0

When asked to indicate the types of support or encouragement provided, they responded as reported in Table 16. Over 50

Table 16: State Supervisors Reporting the Types of Support or Encouragement Provided to Promote the Development of Junior High or Middle School Cluster Programs (N=13)

Response	f	%
Consultation	12	92.3
Curriculum	10	76.9
Inservice activities	9	69.2
Funding	5	38.4
Encouraged as part of tech prep	1	7.7

percent of the supervisors indicated that consultation, curriculum and inservice activities were the primary means used for supporting or encouraging the development of such cluster programs.

Research Question 10

What criteria are used for selecting, preparing, and/or licensing cluster program instructors?

The selection, preparation, and/or licensing of cluster program instructors were areas of interest to the researchers. The state supervisors receiving the instruments were asked to indicate the criteria that were used in selecting, preparing, and/or licensing (including certifying or credentialing) their

cluster program instructors. Responses from the supervisors are presented in summary form in Table 17.

While a variety of criteria were reported, it should be noted that the three criteria specified by over 50 percent of the respondents were:

> Must possess a high school diploma or GED;
>
> Must have occupational experience in one of the employment areas for which students are being prepared for employment; and
>
> Must possess a license, registration, or certification from a government or other qualified agency representing the occupation or occupational group.

Remarks by the respondents indicated that this was a rather complicated process in many states with several possible alternate avenues for an individual to successfully complete the process. However the researchers believed that the three criteria identified above are representative of the general requirements amongst the responding agencies.

Research Question 11

What educational levels have been associated with the establishment of program articulation agreements?

Since articulation appeared to be an important concept related to the implementation of cluster programs, the supervisors were asked to indicate the levels through which

Table 17: State Supervisors Reporting Criteria Used for Selecting, Preparing, and/or Licensing Cluster Program Instructors (N=20)

Criteria	f	%
Must have occupational experience in one of the employment areas for which students are being prepared for employment	17	85.0
Must possess a high school diploma or GED	15	75.0
Must possess a license, registration, or certification from a government or other qualified agency representing the occupation or occupational group	12	60.0
Must have passed a written assessment related to the vocational/technical content area in which he/she is to teach	8	40.0
Must have passed a performance assessment related to the vocational/technical content area in which he/she is to teach	7	35.0
Must possess a baccalaureate degree	6	30.0
Must have occupational experience in two or more of the employment areas for which students are being prepared for employment	2	10.0
Must possess an associate's degree	2	10.0
Must pass an appraisal by technical experts	1	5.0

articulation has been established. Their responses were summarized and presented in Table 18.

Table 18: State Supervisors Reporting Various Levels Through Which Program Articulation Has Been Established (N=20)

Level	f	%
No articulation established	0	0.0
Two-year with four-year postsecondary institutions	10	50.0
Secondary with two-year postsecondary institutions	20	100.0
Junior highs or middle schools with secondary institutions	11	55.0
Elementary schools with junior highs or middle schools	0	0.0
Pre-elementary schools with elementary schools	0	0.0

According to the responses provided by the supervisors, 100 percent of the agencies have established articulation arrangements between secondary institutions and two-year postsecondary institutions. Fifty percent of the respondents indicated that articulation arrangements had been established between two-year and four-year institutions as well as junior highs or middle schools and secondary institutions.

Requests for Copies of the Report

The number of respondents (state supervisors) who requested that a copy of the executive summary of the completed research report for this study be sent to them is shown in Table 19. The researchers thought this was of interest because over 84 percent of the total respondents requested that copies be sent. This was interpreted as indicating that a high level of interest existed regarding cluster programs though they have been widely publicized since the early 1970s.

Table 19: State Supervisors Requesting a Copy of the Executive Summary of the Completed Research Report (N=33)

Response	f	%
No	5	15.2
Yes	28	84.8

Willingness to be Contacted for Further Information

A similar high level of interest in the topic was believed to exist as supported by the number of respondents who expressed a willingness to provide additional information for the purpose of clarifying their responses. As shown in Table 20, 25 or 73.5 percent of the respondents indicated they could be contacted for additional information.

Table 20: State Supervisors Expressing a Willingness to Provide Additional Information to Clarify Their Responses (N=34)

Response	f	%
No	9	26.5
Yes	25	73.5

Additional comments provided by the respondents are included in Appendix F.

Findings for Phase II

Local vocational directors from throughout Colorado were asked to complete a survey during April and May of 1996. The local directors were asked to provide information relative to the utilization of cluster programs in their schools and/or school districts. The information presented in the remainder of this chapter is organized into thirteen major sections--eleven reflective of research questions 12 through 21 presented in Chapter I, one for miscellaneous information, and a summary.

Research Question 12

What level(s) of students are being served by vocational/ technical education programs in Colorado schools/school districts?

As reflected in Table 21, over 95 percent of the local vocational directors responding to the survey indicated that

their vocational/technical education programs served secondary students. Approximately 22 percent reported that their programs served junior high or middle school and postsecondary students.

Table 21: Local Vocational Directors Reporting the Levels of Students Being Served by Vocational/Technical Education Programs in Colorado Schools/School Districts

Level of Students	N	f	%
Junior High or Middle School	127	28	22.0
Secondary	127	121	95.3
Postsecondary	125	28	22.4

When asked to identify the level(s) of students that they were primarily responsible for in their schools/school districts, the local vocational directors responded as indicated in Table 22. Over 81 percent of the respondents specified that their primary responsibility was for secondary students but 8 percent identified postsecondary students and over 11 percent reported that their primary responsibility was for both secondary and postsecondary students. Information presented in Tables 21 and 22 shows that the local directors responding to the survey were primarily oriented toward serving secondary students.

Table 22: Local Vocational Directors Reporting the Levels of Students for Which They had Primary Responsibility in Colorado Schools/School Districts

Level of Students	N	f	%
Secondary	127	104	81.9
Postsecondary	125	10	8.0
Both secondary and postsecondary	127	14	11.2

In addition to providing information relevant to the students served, the local directors were asked to respond to the following statement.

> During a review of the related literature, it was determined that there was a trend toward providing specific occupational skill preparation at the postsecondary level while instruction at the secondary level was becoming less occupational specific. Using the . . . scale . . . indicate . . . the extent to which this is taking place in your school/school district.

The local vocational directors marked one point on a scale divided into six segments in responding to the above statement. A summary of the responses as categorized by the researchers is shown in Table 23. While the responses varied across the scale

Table 23: Local Vocational Directors Reporting the Extent to Which the Trend of Providing Specific Occupational Preparation at the Postsecondary Level and Less Occupational Specific Preparation at the Secondary Level was Taking Place in Their Schools/School Districts (N=125)

Scale Value	f	%
1 (In All Programs)	8	6.4
2	24	19.2
3	46	36.8
4	19	15.2
5	22	17.6
6 (In No Programs)	6	4.8

values, the mean of 3.3 was interpreted as indicating that the directors perceived that the trend was occurring in their settings but only in some programs.

The local directors were also asked to indicate the extent to which they believed the trend described above--providing specific occupational preparation at the postsecondary level and less occupational specific preparation at the secondary level---will continue to take place in the future in their schools/school districts. Each local vocational director was to mark one point on a scale divided into six segments in responding.

A summary of the responses as categorized by the researchers is shown in Table 24. While the responses varied across the scale values, the mean of 3.2 was interpreted as indicating that

the directors perceived that the trend would continue to take place on a gradual basis.

Table 24: Local Vocational Directors Reporting the Extent to Which They Believed the Trend of Providing Specific Occupational Preparation at the Postsecondary Level and Less Occupational Specific Preparation at the Secondary Level Will Continue to Take Place in the Future in Their Schools/School Districts (N=123)

Scale Value	f	%
1 (High)	17	13.8
2	21	17.1
3	40	32.5
4	18	14.6
5	19	15.5
6 (Low)	8	6.5

Research Question 13

How is the cluster program concept being implemented in vocational education agencies throughout Colorado?

Seventy-four (58.7 percent) of the 126 respondents indicated that cluster programs had not been used for vocational education programs in their schools/school districts. Fifty-two (41.3 percent) of the directors reported that cluster programs had been used in vocational education programs in their schools/school districts.

Why Cluster Programs Were Not Being Used

Those local vocational directors who indicated that cluster programs had not been used in their schools/school districts'

vocational education programs were asked to indicate the reasons why such programs had not been used. Their responses are summarized in Table 25. Note that the two reasons identified by 50 percent or more of the directors were "traditional programs are working fine" and "lack of information regarding cluster programs." In addition, over 40 percent of the respondents indicated that "educational personnel are not prepared to make the transition from traditional programs to cluster programs" and

Table 25: Local Vocational Directors Reporting Reasons Why Cluster Programs Had Not Been Used for Vocational Education Programs (N=74)

Reason	f	%
Traditional programs are working fine.	44	59.5
Lack of information regarding cluster programs	37	50.0
Educational personnel are not prepared to make the transition from traditional programs to cluster programs.	31	41.9
Educational facilities available will not support cluster programs.	31	41.9
Too many resources required to implement cluster programs	16	21.6
Lack of administrative commitment	13	17.6
Non-educational personnel such as employers do not support this preparation concept.	4	5.4

"educational facilities available will not support cluster programs."

Plans for the Future Implementation of Cluster Programs

These same individuals were asked to indicate whether personnel in their schools/school districts were planning to implement vocational cluster programs within the next two years. Six or 8.8 percent of the 68 respondents indicated that such implementation was being considered. Thus there seemed to be little support for the immediate utilization of cluster programs in the vocational education delivery system amongst those individuals not currently associated with such programs.

Research Question 14

What criteria are considered when establishing/organizing vocational/technical education cluster programs in Colorado?

The 52 respondents who indicated that their schools/school districts had been using cluster programs for vocational education programs were asked to identify the criteria which were considered when establishing/organizing vocational education cluster programs. Information presented in Table 26 indicated that the four following criteria were identified by over 50 percent of the respondents.

Content commonalities/relationships reflected through an analysis of content (related information) common to a number of otherwise related occupations

Table 26: Local Vocational Directors Reporting Criteria That Were Considered When Establishing/Organizing Vocational Education Cluster Programs in Their Schools/School Districts

Criterion	N	f	%
Content commonalities/relationships reflected through an analysis of content (related information) common to a number of otherwise related occupations	49	38	77.6
Multiple occupational preparation as reflected by the goal of preparing persons for employment in a number of different occupations related with respect to skills, human requirements, industries using such preparation, and cross-occupational mobility opportunities	49	35	71.4
Job entry preparation as reflected by focusing on enabling an individual to gain entrance into employment and not to develop in-depth trade or occupational competency in a number of related occupations	50	29	58.0
A base level of preparation as reflected by the education and training to be experienced by each learner serving as a basis for more in-depth or specialized training to follow in the process of continuous education in a formal educational setting	50	28	56.0
Skill and worker performance commonalities as reflected by the inclusion of a variety of fundamental mental and manual skills appropriate to each of several occupations	49	25	48.1

(table continues)

Criterion	N	f	%
A base level of preparation as reflected by the education and training to be experienced by each learner serving as a basis for more in-depth or specialized training to follow in the process of continuous education in an informal educational setting	50	17	34.0
Availability of qualified educational personnel to operate programs	49	16	32.7
Availability of existing instructional materials from other states or schools/school districts	49	7	14.3

Multiple occupational preparation as reflected by the goal of preparing persons for employment in a number of different occupations related with respect to skills, human requirements, industries using such preparation, and cross-occupational mobility opportunities

Job entry preparation as reflected by focusing on enabling an individual to gain entrance into employment and not to develop in-depth trade or occupational competency in a number of related occupations

A base level of preparation as reflected by the education and training to be experienced by each learner serving as a

basis for more in-depth or specialized training to follow in the process of continuous education in a formal educational setting

One should note that three of these criteria--content commonalities/relationships, a base level of preparation . . . formal educational setting, and multiple occupational preparation--were identified by a majority of the respondents from both the state supervisor and local vocational education director groups. These criteria were also identified by Maley (1975, p. 5) as being important when establishing and/or organizing cluster programs.

Research Question 15

What are the intended and actual outcomes of cluster programs which have been implemented?

When asked to identify the intended and actual outcomes for implementing cluster programs, the respondents replied as shown in Table 27. Note that each of the outcomes listed except "advance occupational skill development" was reported by over 67 percent of the respondents as both an intended and an actual outcome. Thus, it appeared that the emphasis in utilizing cluster programs was resulting in achievement of the intended outcomes.

While the two outcomes--basic occupational skill development and occupational preparation--were reported as intended and actual incomes by the largest number of respondents, it is worthwhile to note that the directors believed the outcomes of

Table 27: Local Vocational Directors Reporting the Intended and Actual Educational Outcomes for Implementing Cluster Programs in Their Schools/School Districts (N=49)

Educational Outcome	Intended		Actual	
	f	%	f	%
Basic occupational skill development	41	83.7	37	75.5
Occupational awareness	38	77.5	37	75.5
Basic academic skill development	39	79.6	35	71.4
Occupational preparation	39	79.6	34	69.4
Occupational exploration	37	75.5	33	67.3
Advanced occupational skill development	20	40.8	14	28.6

"occupational exploration," "basic academic skill development," and "occupational awareness" were being met through cluster programs.

Research Question 16

How is the cluster program concept being implemented in Trade and Industrial Education and/or Technical Education programs in Colorado?

Those individuals who reported that cluster programs had been used for vocational education programs in their schools/school districts were then asked whether cluster programs

had been used for Trade and Industrial Education and/or Technical Education programs. Of the 52 respondents who indicated that cluster programs were used in vocational education, only twenty-five reported that cluster programs had not been used for Trade and Industrial Education and/or Technical Education programs. Twenty-five respondents who indicated that such programs had been used were then asked to respond to a series of items dealing with the utilization of cluster programs in Trade and Industrial Education and/or Technical Education programs.

These local vocational directors were asked to list the names of the Trade and Industrial Education and/or Technical Education cluster programs offered in their schools/school districts and to indicate whether the clusters were active at the junior high or middle school level, the secondary level, or the postsecondary level. The responses from the 25 directors who completed this part of the instrument are summarized in Table 28.

The responses confirmed what the results of the review of literature had indicated--that various names were being assigned to clusters which might be very similar in purpose and content. While there was nothing inherently wrong with this, it made consolidation of the data somewhat difficult. To secure a true picture as to the extent of commonalities within Colorado, listings of the occupations or topics around which the clusters were designed or of the learning activities included would have been helpful.

The researchers used their own interpretation of the titles in preparing the summary presented in Table 28. Note that all cluster programs identified by the directors as being associated with Trade and Industrial Education and/or Technical Education were included. No attempt was made by the researchers to determine if the inclusion of a particular cluster name was appropriate or inappropriate.

One should note from the information presented that there were a wide variety of clusters offered at both the secondary and postsecondary levels. The five clusters at the secondary level reported by the largest number of respondents were "engineering and technical services," "business," "transportation technology," "health," and "manufacturing technology." At the postsecondary level, the six clusters reported by the largest number of respondents were "business," "agriculture," "criminal justice," "engineering and technical services," "manufacturing technology," and "transportation technology."

Research Question 17

What types of support or encouragement are provided for the development of junior high or middle school cluster programs by personnel at the school/school district level?

Those directors who reported that cluster programs had been used for Trade and Industrial Education and/or Technical Education programs were asked to indicate whether their schools/school districts supported or encouraged the development of junior high or middle school cluster programs. Sixteen of the

Table 28: Local Vocational Directors Reporting the Names of the Trade and Industrial Education and/or Technical Education Cluster Programs Offered in Their Schools/School Districts (N=25)

Cluster Name	Grade Level: Junior High f	Junior High %	Secondary f	Secondary %	Postsecondary f	Postsecondary %
Agriculture	1	4.0	3	12.0	2	8.0
Agriculture Industrial Mechanics			1	4.0		
Applied Technology			1	4.0		
AVP Program			1	4.0		
Bio/Health Technology			2	8.0	1	4.0
Business	2	8.0	5	20.0	4	16.0
Child Care			1	4.0	1	4.0
Communications			2	8.0		
Construction Technology			1	4.0	1	4.0
Consumer and Family Studies	1	4.0	1	4.0		
Criminal Justice					2	8.0
Culinary Arts	1	4.0	1	4.0	1	4.0
Electronics			1	4.0	1	4.0
EMT			1	4.0	1	4.0
Engineering and Technical Services			6	24.0	2	8.0
Environmental Technology			2	8.0	2	8.0
Health			4	16.0	1	4.0

(table continues)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Human Services			1	4.0	1	4.0
Industrial Arts			1	4.0		
Industrial Design Technology					1	4.0
Information Management			1	4.0	1	4.0
Instrumentation Technology					1	4.0
Manufacturing Technology			4	16.0	2	8.0
Mechanical Technology			1	4.0	1	4.0
Multimedia Technology					1	4.0
Pre-engineering	1	4.0	2	8.0	1	4.0
SBA					1	4.0
Technical Occupations	1	4.0	1	8.0		
Technology Education	1	4.0				
TPAD			1	4.0		
Transportation Technology			5	20.0	2	8.0

respondents (64 percent) indicated that such support or encouragement was provided.

These 16 respondents were asked to identify the types of support or encouragement provided by school/school district

personnel to those individuals responsible for implementing cluster programs. As shown in Table 29, the four types of support or encouragement reported by at least 50 percent of the respondents were curriculum, consultation, funding, and inservice activities. These results were perceived as indicating that most of the respondents recognized cluster programs as a positive delivery technique.

Table 29: Local Vocational Directors Reporting the Types of Support or Encouragement Provided by School/School District Personnel to Those Individuals Responsible for Implementing Junior High or Middle School Cluster Programs (N=16)

Type of Support	f	%
Curriculum	12	75.0
Consultation	9	56.3
Funding	8	50.0
Inservice activities	8	50.0

Research Question 18

How do the results of cluster programs offerings in Colorado Trade and Industrial Education and/or Technical Education programs compare with those of traditional occupational preparation programs?

The local vocational education directors were asked to indicate how the results of cluster program offerings in their schools/school districts compared with those of traditional

occupational preparation programs. The directors responded by selecting one point on a five-point scale. A scale value of 1 indicated that cluster programs produced results which were much greater than those of traditional programs while a scale value of 5 specified that cluster programs produced results which were much less than those of traditional programs. The responses were summarized and are presented in Table 30. It should be noted that all responses had mean ratings less than 2.5. The major contributions of cluster programs as perceived by the respondents were in the areas of "provide better support for the processes through which individuals make occupational or career decisions" and "provide better preparation of the individual to work in a rapidly changing labor market." These were the same two areas as were reported by the state directors in Phase I of this study.

Research Question 19

How do(es) the purpose(s) of the same or similar clusters at the secondary and postsecondary levels differ?

The local vocational education directors were asked to indicate whether there was a difference between the purpose(s) of the same or similar clusters at the secondary and postsecondary levels. Only four (16 percent) of the 25 directors responding indicated that there were differences in the purpose(s) of the same or similar clusters at the secondary and postsecondary levels.

Though the individuals who reported that a cluster program differed in purpose at the secondary and postsecondary levels

Table 30: Local Vocational Education Directors Reporting How the Results of Cluster Program Offerings Compare With Those of Traditional Occupational Preparation Programs

Response	N	M
Provide better preparation of the individual to work in a rapidly changing labor market	25	1.60
Provide better support for the processes through which individuals make occupational or career decisions	25	1.60
Prepare students for success in more employment settings	25	1.72
Provide better support for the concept that continuous education [lifelong learning] is an important component in the career ladder of many individuals	25	1.72
Result in greater student interest in program	25	1.88
Result in greater employer support	25	1.96
Result in greater student interest in school	25	2.04
Result in greater job placement rates	24	2.33

were asked to indicate how the purposes differed, only two responses were received. In both of the responses, it was suggested that the cluster programs at the postsecondary level were more occupationally specific than those at the secondary level.

Research Question 20

What levels of acceptance of cluster programs have been shown by members of various groups within your school/school district?

In an effort to get a measure as to the level of acceptance of cluster programs shown by educators including vocational and technical instructors, vocational directors, principals and others in the various states, the directors were asked to mark one point on a scale divided into six segments. A summary of the responses as categorized by the researchers is shown in Table 31. The responses were clustered toward the high end of the scale and the mean of 1.84 was interpreted as indicating that the directors perceived that there was a positive level of acceptance by the educators.

Table 31: Local Vocational Education Directors Reporting Various Levels of Acceptance of Cluster Programs by Educators in Their Schools/School Districts (N=25)

Scale Value	f	%
1 (High)	9	36.0
2	12	48.0
3	3	12.0
4	1	4.0
5	0	0.0
6 (Low)	0	0.0

Another item was designed to solicit the level of acceptance of cluster programs shown by industry personnel. Each director

was asked to indicate the level of acceptance he/she perceived by marking one point on a scale divided into six segments. A summary of the responses as categorized by the researchers is shown in Table 32. The responses were clustered toward the high end of the scale and the mean of 1.92 was interpreted as indicating that the directors perceived that there was a positive level of acceptance by the industry personnel.

Table 32: Local Vocational Education Directors Reporting Various Levels of Acceptance of Cluster Programs by Industry Personnel (N=25)

Scale Value	f	%
1 (High)	7	28.0
2	13	52.0
3	5	20.0
4	0	0.0
5	0	0.0
6 (Low)	0	0.0

A third item was designed to solicit the level of acceptance of cluster programs shown by postsecondary program personnel. The directors were asked to indicate the level of acceptance they perceived by again marking one point on a scale divided into six segments. A summary of the responses as categorized by the researchers is shown in Table 33. The responses were clustered toward the high end of the scale and the mean of 1.81 was interpreted as indicating that the directors perceived that there

Table 33: Local Vocational Directors Reporting Various Levels of Acceptance of Cluster Programs by Postsecondary Program Personnel (N=21)

Scale Value	f	%
1 (High)	3	14.3
2	10	47.6
3	5	23.8
4	0	0.0
5	0	0.0
6 (Low)	0	0.0

was a positive level of acceptance by the postsecondary personnel.

Research Question 21

What relationship is being established between/among cluster programs in Trade and Industrial Education and/or Technical Education and programs such as Technology Education and Applied Academics?

In an attempt to determine how cluster programs in Trade and Industrial Education and/or Technical Education were being utilized in connection with such current efforts as Applied Academics, School-to-Work, and Technology Education, the directors were asked to respond to a series of statements. Their responses were summarized and are presented in Table 34. It should be noted that the strongest relationships are being established between cluster programs and the School-to-Work system.

Table 34: Local Vocational Directors Reporting Relationships Which Were Established or Being Established Between/among Cluster Programs in Trade and Industrial Education and/or Technical Education and Programs Such as Applied Academics, School-to-Work, and Technology Education (N=24)

Relationships	f	%
Completion of a Technology Education program is recommended as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.	7	29.2
Completion of a Technology Education program is required as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.	3	12.5
Completion of an Applied Academics program (i.e., *Applications in Biology/Chemistry, Applied Communication, Applied Mathematics, Principles of Technology*) is recommended as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.	9	8.0
Completion of an Applied Academics program (i.e., *Applications in Biology/Chemistry, Applied Communication, Applied Mathematics, Principles of Technology*) is required as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.	2	8.3

(table continues)

Relationships	f	%
It is recommended that cluster Trade and Industrial or Technical Education programs be included as one component of the state's School-to-Work system.	13	54.2
It is required that cluster Trade and Industrial or Technical Education programs be included as one component of the state's School-to- Work system.	3	12.5
No relationship has been established.	5	20.8

However, the responses regarding this relationship as well as the others mentioned in Table 13 must be interpreted carefully. One of the situations which the items on the instrument failed to address was those programs which participants should undertake concurrently. If there had been more items addressing this type of situation, a clearer picture of the various relationships might have been obtained.

Research Question 22

What educational levels have been associated with the establishment of program articulation agreements?

Since articulation appeared to be an important concept related to the implementation of cluster programs, the directors were asked to indicate the levels through which articulation had been established. Their responses were summarized and presented

in Table 35. Over 45 percent of the directors reported that articulation arrangements between secondary cluster programs and non-cluster two-year programs as well as two-year cluster programs with four-year postsecondary institutions had been established.

Table 35: Local Vocational Directors Reporting Various Educational Levels Through Which Program Articulation Has Been Established (N=24)

Level	f	%
Two-year cluster programs with four-year postsecondary institutions	12	50.0
Secondary cluster programs with non-cluster two-year postsecondary programs	11	45.8
Junior high or middle school programs with secondary cluster programs	8	33.3
Secondary cluster programs with cluster two-year postsecondary programs	8	33.3
No articulation established	3	12.5
Elementary school programs with junior high or middle school programs	2	8.3
Pre-elementary school programs with elementary school programs	1	4.2

Miscellaneous Information

Ninety-seven of the 125 individuals responding to an item concerning the availability of an executive summary of the research report indicated that a copy should be sent to them. The researchers considered this to be of interest because over 77 percent of the total respondents requested that a copy be sent. This was interpreted as indicating that a high level of interest existed regarding cluster programs.

A similar level of interest in the topic was believed to exist as supported by the number of respondents who expressed a willingness to provide additional information for the purpose of clarifying their responses to items on the instrument. Forty-three (33.9 percent) of the 127 respondents indicated that they could be contacted for additional information.

Additional comments provided by 16 of the respondents are included in Appendix H. Note that the comments are organized in alphabetical order for ease of presentation. The only changes made in the original statements were the elimination of the names of any agencies and possible grammatical corrections.

Summary

Since approximately 41 percent of the directors responding to the instrument indicated that their schools/school districts were utilizing cluster programs in vocational education, there appeared to be interest in the application of the concept. Only about 9 percent of those directors indicating that cluster programs had not been used indicated that there were plans in

their schools/school districts to implement such programs within the next two years.

Chapter V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

Introduction

This chapter was prepared to present a summary of the research effort as related in Chapters 1 through 4 of this report plus the conclusions, implications, and recommendations for further study originating from the research.

Summary

This research was conducted to describe activities which were completed as a result of funding received from a response to a "Request for Activities Concerning Cluster Programs" which was issued by the Vocational/Technical Manager, Trade and Industrial and Technical Education, Colorado Community College and Occupational Education System (CCCOES) on November 12, 1995. In this "Request . . ." it was stipulated that information and data were needed regarding model cluster programs as suggested by members of the Colorado State Technical Committee for Standards in Trade and Industrial/Technical Education.

Need for the Study

Information regarding cluster programs was considered to be important because of the changes which have occurred and are occurring throughout our society. Technological, political, industrial, and social changes resulted in a reduction of public support for many current public services including education as

reflected by decreased budget allocations and increased concern about the job being done by schools. At the same time, there was an increased demand for qualified workers--individuals who not only possessed specific work skills related to an employment situations but who also possessed basic academic and human relations skills.

Given this situation, many educational entities associated with vocational and technical education are examining the possibility of offering occupational preparation activities along with basic skills in a setting described as cluster programs. Migal (cited in Lozada, 1995, p. 29) stated that "In the cluster approach, your job opportunities probably quadruple. It's a benefit to the industry and it's a benefit to the young person." The activities completed as part of this research effort and described herein are intended to provide a basis for suggesting the potential impact of implementing cluster programs as part of Colorado's Trade and Industrial and Technical Education programs.

Statement of the Problem

This study was designed to investigate the potential impact of implementing cluster programs. Specifically, the problem identified to give direction to this study was:

> How should cluster programs be implemented in Colorado to promote the efficiency and effectiveness of Trade and Industrial and Technical Education offerings?

Purpose of the Study

The purpose of this study was to provide recommendations for consideration by the Vocational/Technical Manager, Trade and Industrial and Technical Education, Colorado Community College and Occupational Education System, and to members of the Colorado State Technical Committee for Standards in Trade and Industrial/ Technical Education regarding the potential process for and impact of implementing cluster programs in Colorado. Such information was perceived as being of value in determining whether, when, where, and how such implementation should take place and how the State might best support such implementation.

Research Questions

The following research questions served to give direction to the activities completed as part of this study. It should be noted that the study itself was divided into three phases, two of which were completed as a result of the activities reported herein. The research questions listed below are listed according to the phases--I or II--of the study in which they were addressed.

Phase I--State Supervisors of Trade and Industrial Education and/or Technical Education

1. How is the cluster program concept being implemented in vocational education agencies throughout the United States?

2. What criteria are used when establishing/organizing cluster programs in vocational education agencies?

3. How is the cluster program concept being implemented in Trade and Industrial Education and/or Technical Education programs throughout the United States?

4. What are the intended outcomes of cluster programs which have been implemented?

5. What types of support are provided for the implementation of cluster programs by personnel at the state level?

6. How do the results of cluster program offerings in Trade and Industrial Education and/or Technical Education compare with those of traditional occupational preparation programs?

7. How do(es) the purpose(s) of the same or similar clusters at the secondary and postsecondary levels differ?

8. What levels of acceptance of cluster programs have been shown by members of various groups?

9. What relationship is being established between/among cluster programs in Trade and Industrial Education and/cr Technical Education and programs such as Technology Education and Applied Academics?

10. What criteria are used for selecting, preparing, and/or licensing cluster program instructors?

11. What educational levels have been associated with the establishment of program articulation agreements?

Phase II--Colorado Local Vocational Directors

12. What level(s) of students are being served by vocational/technical education programs in Colorado schools/school districts?

13. How is the cluster program concept being implemented in vocational education agencies in Colorado?

14. What criteria are considered when establishing/ organizing vocational/technical cluster programs in Colorado?

15. What are the intended and actual outcomes of cluster programs which have been implemented?

16. How is the cluster program concept being implemented in Trade and Industrial Education and/or Technical Education programs in Colorado?

17. What types of support or encouragement are provided for the development of junior high or middle school cluster programs by personnel at the school/school district level?

18. How do the results of cluster programs offerings in Colorado Trade and Industrial Education and/or Technical Education programs compare with those of traditional occupational preparation programs?

19. How do the purpose(s) of the same or similar clusters at the secondary and postsecondary levels differ?

20. What levels of acceptance of cluster programs have been shown by members of various groups within your school/school district?

21. What relationship is being established between/among cluster programs in Trade and Industrial Education and/or Technical Education and programs such as Technology Education and Applied Academics?

22. What educational levels have been associated with the establishment of program articulation agreements?

Populations

To secure the data necessary for addressing the research questions listed above, members of two separate groups associated with Trade and Industrial Education and/or Technical Education programs were to be contacted. In relation to Phase I of the study, the 51 supervisors of Trade and Industrial Education and/or Technical Education programs within the 50 states and the District of Columbia were asked to provide relevant information. For Phase II, the 196 local vocational directors in Colorado were contacted with a request that they provide specific information.

Instrumentation

Two separate mail instruments were prepared--one to be completed by the state supervisors of Trade and Industrial Education and/or Technical Education and one for completion by the local vocational directors in Colorado. Items on the instruments reflected concepts which were identified as a result of the review of literature.

Drafts of the instrument to be completed by the state supervisors were reviewed by a representative of the funding agency plus members of the Colorado State Technical Committee for Standards in Trade and Industrial/Technical Education. Based upon their recommendations, final changes were then made in the instrument.

Drafts of the instrument to be completed by the local vocational directors in Colorado were reviewed by a representative of the funding agency plus one local vocational director. Based upon their recommendations, the instrument was revised.

A copy of the finalized instruments are included in Appendixes A and C. It should be noted that the actual instruments were formatted so that their sizes were 7 inches by 8 1/2 inches.

Data Collection Procedures

Instruments plus a cover letter (Appendixes B and D) were mailed by the Colorado Vocational/Technical Manager, Trade and Industrial and Technical Education, Colorado Community College and Occupational Education System (CCCOES) to all members of the populations specified above. A second mailing was made to all non-respondents approximately two weeks after the first mailing. After approximately two more weeks, the researchers contacted non-respondents via mail or by telephone and requested that the instruments they received be completed and returned.

Data Analysis

In Phase I of the study, the responses reported by the state supervisors of Trade and Industrial Education and/or Technical Education on the 35 returned forms (a return percentage of 68.6 percent) were coded and entered into a computer data base. The data were then analyzed using the Statistical Package for the

Social Sciences (SPSS). Only frequency counts and percentages were reported in this document.

For Phase II, of the 196 local vocational directors in Colorado who were contacted, 129 returned instruments were received for a total return rate of 65.8 percent. Responses reported on the 127 usable instruments (usable return rate of 64.8 percent) were coded and entered into a computer data base. The data were then analyzed using the Statistical Package for the Social Sciences (SPSS). Only frequency counts and percentages were reported in this document.

Findings

The findings associated with this study are summarized below. These findings were categorized as to their relationship with Phases I and II of the study.

Phase I

1. Over 60 percent of the state supervisors indicated that cluster programs had been used in vocational education programs in their states.

2. Fifty percent of the state supervisors who reported that cluster programs had not been used indicated that the primary reason why cluster programs had not been used in their states was "educational personnel are not prepared to make the transition from traditional programs to cluster programs."

3. Approximately 58 percent of the state supervisors who indicated that cluster programs had not been used in vocational

education programs in their states reported that there were plans for their states to implement such programs within the next two years.

4. Over 50 percent of the state supervisors who reported that their states had been using cluster programs in vocational education programs indicated that the following criteria were considered when establishing/organizing vocational education cluster programs.

> Content commonalities/relationships reflected through an analysis of content (related information) common to a number of otherwise related occupations
>
> A base level of preparation as reflected by the education and training to be experienced by each learner serving as a basis for more in-depth or specialized training to follow in the process of continuous education in a <u>formal</u> educational setting
>
> Skill and worker performance commonalities as reflected by the inclusion of a variety of fundamental mental and manual skills appropriate to each of several occupations
>
> Multiple occupational preparation as reflected by the goal of preparing persons for employment in a number of different

occupations related with respect to skills, human requirements, industries using such preparation, and cross-occupational mobility opportunities

5. Of the 23 state supervisors who reported that cluster programs were used in vocational education, 22 indicated that such programs had been used for Trade and Industrial Education and/or Technical Education programs.

6. Twenty-one of the 22 state supervisors who said that cluster programs were used in Trade and Industrial Education and/or Technical Education programs identified, as categorized by the researchers, 53 different clusters which were being used in Trade and Industrial Education and/or Technical Education.

7. The predominant grade level at which the Trade and Industrial Education and/or Technical Education identified by the state supervisors was the secondary level.

8. The intended educational outcomes for implementing cluster programs as identified by at least 75 percent the state supervisors who reported that their states had such programs were "basic occupational skill development" and "occupational preparation."

9. The types of support provided by state level personnel to those individuals responsible for implementing cluster programs as identified by at least 60 percent the state supervisors who reported that their states had such programs were "consultation," "inservice activities," "curriculum," and "funding."

10. Over 50 percent of the state supervisors who reported that their states had cluster programs in Trade and Industrial Education and/or Technical Education indicated that cluster program offerings

> provide better support for the processes through which individuals make occupational or career decisions, and
>
> provide better preparation of the individual to work in a rapidly changing labor market

than traditional occupational preparation programs.

11. Eleven (57.9 percent) of the 19 supervisors responding indicated that the purpose(s) of the same or similar clusters at the secondary and postsecondary levels differed.

12. Responses from those individuals who believed there was a difference in the purpose(s) of the same or similar clusters at the secondary and postsecondary levels suggested that the cluster programs at the postsecondary level were very occupationally specific while secondary programs were more general or exploratory in design.

13. State supervisors who reported that their states had cluster programs in Trade and Industrial Education and/or Technical Education indicated that educators including vocational and technical instructors, vocational directors, and principals had shown a positive level of acceptance of cluster programs.

14. State supervisors who reported that their states had cluster programs in Trade and Industrial Education and/or

Technical Education indicated that industry personnel had shown a positive level of acceptance of cluster programs.

15. State supervisors who reported that their states had cluster programs in Trade and Industrial Education and/or Technical Education indicated that postsecondary program personnel had shown a positive level of acceptance of cluster programs.

16. Over 50 percent of the 21 responding state supervisors who reported that their states had cluster programs in Trade and Industrial Education and/or Technical Education indicated that the following relationships had been or were being established.

> Completion of a Technology Education program is recommended as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.
>
> It is recommended that cluster Trade and Industrial or Technical Education programs be included as one component of the state's School-to- Work system.
>
> Completion of an Applied Academics program is recommended as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.

17. Over 60 percent of the 21 responding state supervisors who reported that their states had cluster programs in Trade and

Industrial Education and/or Technical Education indicated that the following criteria were used for selecting, preparing, and or licensing cluster program instructors.

Must have occupational experience in one of the employment areas for which students are being prepared for employment

Must possess a high school diploma or GED

Must possess a license, registration, or certification from a government or other qualified agency representing the occupation or occupational group

18. Over 50 percent of the 21 responding state supervisors who reported that their states had cluster programs in Trade and Industrial Education and/or Technical Education indicated that program articulation had been established at the following educational levels.

Secondary with two-year postsecondary institutions

Junior highs or middle schools with secondary institutions

Two-year with four-year postsecondary institutions

Phase II

19. Over 95 percent of the local vocational directors in Colorado reported that secondary students were being served by their vocational/technical education programs while only about 22 percent indicated that postsecondary and junior high or middle school students were served by such programs.

20. Over 80 percent of the local vocational directors reported that secondary students were the group for which they had primary responsibility while 8 percent indicated postsecondary students and 11.2 percent both secondary and postsecondary students.

21. The local vocational directors' responses indicated that the trend of providing specific occupational preparation at the postsecondary level and less occupational specific preparation at the secondary level was occurring in their educational settings but only in some programs.

22. The local vocational directors' responses indicated that the trend of providing specific occupational preparation at the postsecondary level and less occupational specific preparation at the secondary level would continue to take place on a gradual basis.

23. Forty-one percent of the local vocational directors in Colorado indicated that cluster programs had been used in vocational education programs in their schools/school districts.

24. Over 50 percent of the local vocational directors reported that the primary reasons why cluster programs had not

been used in their schools/school districts were "traditional programs are working fine" and "lack of information regarding cluster programs."

25. Only about 9 percent of the local vocational directors who indicated that cluster programs had not been used in vocational education programs in their schools/school districts reported that there were plans to implement such programs within the next two years.

26. Over 50 percent of the local vocational directors who reported that their schools/school districts had been using cluster programs in vocational education programs indicated that the following criteria were considered when establishing/organizing vocational education cluster programs.

Content commonalities/relationships reflected through an analysis of content (related information) common to a number of otherwise related occupations

Multiple occupational preparation as reflected by the goal of preparing persons for employment in a number of different occupations related with respect to skills, human requirements, industries using such preparation, and cross-occupational mobility opportunities

Job entry preparation as reflected by focusing on enabling an individual to gain entrance into employment and not to develop in-depth trade or occupational competency in a number of related occupations

A base level of preparation as reflected by the education and training to be experienced by each learner serving as a basis for more in-depth or specialized training to follow in the process of continuous education in a formal educational setting.

27. The intended educational outcomes for implementing cluster programs as identified by at least 75 percent of the local vocational directors who reported that their schools/school districts had such programs were "basic occupational skill development," "basic academic skill development," "occupational preparation," "occupational awareness," and "occupational exploration."

28. The actual educational outcomes for implementing cluster programs as identified by at least 67 percent the local vocational directors who reported that their schools/school districts had such programs were "basic occupational skill development," "occupational awareness," "basic academic skill development," "occupational preparation," and "occupational exploration."

29. Of the 52 local vocational directors who reported that cluster programs were used in vocational education, 25 indicated that such programs had been used for Trade and Industrial Education and/or Technical Education programs.

30. The 25 local vocational directors who said that cluster programs were used for Trade and Industrial Education and/or Technical Education programs identified, as categorized by the researchers, 31 different clusters which were being used in Trade and Industrial Education and/or Technical Education.

31. The predominant grade level at which the Trade and Industrial Education and/or Technical Education clusters identified by the local vocational directors were offered was the secondary level.

32. Sixty-four percent of the local vocational directors who reported that cluster programs had been used for Trade and Industrial Education and/or Technical Education programs indicated that their school/school districts supported or encouraged the development of junior high or middle school clusters.

33. The types of support provided by school/school district personnel to those individuals responsible for developing cluster programs at the junior high or middle school level as identified by at least 50 percent the local vocational directors who reported that their schools/school districts had such programs were "curriculum," "consultation," "funding," and "inservice activities."

34. Sixteen percent of the 25 local vocational directors who reported that cluster programs had been used for Trade and Industrial Education and/or Technical Education programs indicated that the purpose(s) of the same or similar clusters at the secondary and postsecondary levels differed.

35. Responses from those individuals who believed there was a difference in the purpose(s) of the same or similar clusters at the secondary and postsecondary levels suggested that the cluster programs at the postsecondary level were more occupationally specific than those at the secondary level.

36. Local vocational directors who reported that their schools/ school districts had cluster programs in Trade and Industrial Education and/or Technical Education indicated that educators including vocational and technical instructors, vocational directors, and principals had shown a highly positive level of acceptance of cluster programs.

37. Local vocational directors who reported that their schools/ school districts had cluster programs in Trade and Industrial Education and/or Technical Education indicated that industry personnel had shown a highly positive level of acceptance of cluster programs.

38. Local vocational directors who reported that their schools/ school districts had cluster programs in Trade and Industrial Education and/or Technical Education indicated that postsecondary program personnel had shown a highly positive level of acceptance of cluster programs.

39. Over 50 percent of the 24 responding local vocational directors who reported that their schools/school districts had cluster programs in Trade and Industrial Education and/or Technical Education indicated that the following relationship had been or was being established.

> It is recommended that cluster Trade and Industrial or Technical Education programs be included as one component of the state's School-to- Work system.

40. Over 45 percent of the 24 responding local vocational directors who reported that their schools/school districts had cluster programs in Trade and Industrial Education and/or Technical Education indicated that program articulation had been established at the following educational levels.

> Two-year cluster programs with four-year postsecondary institutions
>
> Secondary cluster programs with non-cluster two-year postsecondary institutions

Conclusions and Implications

The conclusions and implications presented in this section of the report were based on the review of literature and findings related to this research. The conclusion and the implications associated with each conclusion are presented below.

1. Cluster programs should be supported as one delivery system for Trade and Industrial Education and/or Technical Education programs in Colorado.

Implications

It appears that traditional vocational programs are working well in many educational settings and thus should not be abandoned without thorough consideration. Definitions of cluster and traditional programs should be clarified and shared with all individuals concerned. In addition, inservice activities must be made available to those individuals who will be responsible for implementing such programs.

2. Specific criteria should be specified for consideration when establishing and/or organizing a cluster program.

Implications

Criteria identified in earlier sections of this report should be considered in formulating cluster programs. Such criteria are perceived as being helpful because of uncertainty expressed by respondents from both of the populations regarding the concept of cluster programs. Historically, the phrase had various meanings so this situation should be clarified at an early date.

3. The total concept of cluster programs is not fully compatible with the current service or occupational program area structure of some vocational and technical education entities.

Implications

Consideration in administrative structure of entities at both the state and local levels needs to be directed to how best facilitate the supervision including approval and funding of cluster programs which impact several traditional service or occupational program areas. While some clusters will retain a direct relationship to traditional organizational structures others, as evidenced by comments made and by the cluster names listed as Trade and Industrial Education and/or Technical Education clusters by the respondents, will extend beyond the traditional service or occupational program area.

4. The perceived advantages and/or disadvantages of cluster programs should be related to those individuals who may be considering whether it would be advantageous to use such a concept.

Implications

Cluster programs are perceived by members of both groups involved in this study as producing results which exceed those of traditional programs. In addition, those respondents from both groups who were associated with cluster programs believed that other educators including

3. The total concept of cluster programs is not fully compatible with the current service or occupational program area structure of some vocational and technical education entities.

Implications

Consideration in administrative structure of entities at both the state and local levels needs to be directed to how best facilitate the supervision including approval and funding of cluster programs which impact several traditional service or occupational program areas. While some clusters will retain a direct relationship to traditional organizational structures others, as evidenced by comments made and by the cluster names listed as Trade and Industrial Education and/or Technical Education clusters by the respondents, will extend beyond the traditional service or occupational program area.

4. The perceived advantages and/or disadvantages of cluster programs should be related to those individuals who may be considering whether it would be advantageous to use such a concept.

Implications

Cluster programs are perceived by members of both groups involved in this study as producing results which exceed those of traditional programs. In addition, those respondents from both groups who were associated with cluster programs believed that other educators including

postsecondary program personnel as well as industry personnel had a positive level of acceptance for such programs. However, few of the individuals at the local level indicated that there were plans for implementing such programs within the next two years. Because of this, a campaign should be implemented to identify the potential advantages of implementing such a concept.

5. Program articulation should be stressed as an important part of the cluster program concept.

Implications

Though the respondents from both groups who were associated with cluster programs reported that articulation was being established at various levels, agencies at the state and local levels must recognize the importance of this not only to the students but to the educators associated with the various programs. Articulation agreements will not only influence the content to be dealt with at various levels but also the depth of the instruction related to the content. It appears at this time that articulation agreements between/among junior high or middle school programs, secondary programs, and two-year postsecondary programs should be emphasized.

Recommendations for Further Study

Based upon the findings and conclusions presented earlier, it was recommended that studies concerning cluster programs in

Trade and Industrial Education and/or Technical Education be completed dealing with the following topics.

1. Identification of the contents and/or occupations included as part of various named clusters

2. Clarification of the relationship(s) which are established or being established between/among cluster programs in Trade and Industrial Education and/or Technical Education and programs such as Applied Academics, School-to-Work, and Technology Education

3. Comparison of the intended versus actual educational outcomes related to the implementation of cluster programs in terms of the level of achievement of the intended outcomes

4. Comparison of various models used in implementing cluster programs within Trade and Industrial Education and/or Technical Education

5. Comparison of various models used in implementing cluster programs in Trade and Industrial Education and/or Technical Education and other areas of vocational and technical education

6. Types of support and/or encouragement other than the ones identified in this study which might enhance the implementation of cluster programs

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Appendix A

A National Study of State Supervisors on the Implementation of Cluster Programs in Trade and Industrial Education and/or Technical Education Programs

State ID _____

A National Study of State Supervisors on the Implementation of Cluster Programs in Trade and Industrial Education and/or Technical Education Programs

School of Education
Colorado State University
Fort Collins, CO 80523-1588
Voice (970) 491-5160
FAX (970) 491-1317
E-mail jansen@cahs.colostate.edu

in cooperation with
Colorado Community College and Occupational Education System
1391 North Speer Boulevard, Suite 600
Denver CO 80204-2554

January 31, 1996

Directions

This instrument is designed to collect information relative to the utilization of cluster programs in Trade and Industrial and Technical Education throughout the United States. You are asked to assist us by completing the form--probably about twenty (20) minutes of your time. Your response is important in this endeavor as only one person in each state is being asked to respond and information regarding each state is needed. The results will be made available nationally and used in planning future programmatic efforts in Colorado.

You may be assured that your response will be treated with confidentiality. This instrument has a Sate ID assigned for mailing purposes only. This is so we might check your state off the mailing list when the completed instrument is returned or for follow-up purposes if no completed form is received. Your name or the name of the state which you represent will not be placed on the instrument and all results will be reported as derived from an analysis of grouped responses.

If you have any questions about this instrument, contact Dr. Duane Jansen, School of Education, Colorado State University, as noted on the cover of this document.

Please record your responses to the following items. In responding, consider the following definition of a vocational education cluster program.

> A *vocational education cluster program* is defined as a field of study organized around careers with learning activities designed to impact both vocational preparation and basic academic skills so that an individual might choose from among several possible employment opportunities or choose to continue her/his education. (Dykman, 1995)

1. Have cluster programs been used for vocational education programs (i.e., agriculture, business, health, etc.) in your state? [Check only one response.]

   _____ a . No . . . if no, proceed to item 2, this page.

   _____ b. Yes . . . if yes, proceed to item 4, page 4.

2. Indicate the reason(s), as you perceive it (them), why cluster programs have not been used for vocational programs in your state? [Check all that apply.]

   _____ a. Traditional programs are working fine.

   _____ b. Too many resources required to implement cluster programs.

   _____ c. Educational personnel are not prepared to make the transition from traditional programs to cluster programs.

   _____ d. Educational facilities available will not support cluster programs.

   _____ e Non-educational personnel such as employers do not support this preparation concept.

   _____ f. Other _____

   _____

   _____

3. Do educational personnel in your state plan to implement vocational education cluster programs within the next two years? [Check only one response.]

   _____ a. No

   _____ b. Yes

PROCEED TO ITEM 18 ON PAGE 14.

4. What criteria were considered when establishing/organizing vocational education cluster programs? [Check all that apply.]

____ a. Content commonalties/relationships reflected through an analysis of content (related information) common to a number of otherwise related occupations

____ b. Skill and worker performance commonalties as reflected by the inclusion of a variety of fundamental mental and manual skills appropriate to each of several occupations

____ c. A base level of preparation as reflected by the education and training to be experienced by each learner serving as a basis for more in-depth or specialized training to follow in the process of continuous education in a formal educational setting.

____ d. A base level of preparation as reflected by the education and training to be experienced by each learner serving as a basis for more in-depth or specialized training to follow in the process of continuous education in an informal educational setting.

____ e. Multiple occupational preparation as reflected by the goal of preparing persons for employment in a number of different occupations related with respect to skills, human requirements, industries using such preparation, and cross-occupational mobility opportunities.

____ f. Job entry preparation as reflected by focusing on enabling an individual to gain entrance into employment and not to develop in-depth trade or occupational competency in a number of related occupations.

____ g. Availability of qualified educational personnel to operate programs

____ h. Availability of existing instructional materials from other states or agencies

____ i. Other _____

_____

_____

_____

5. Have cluster programs been used for Trade and Industrial Education and/or Technical Education programs in your state? [Check only one response.]

____ a. No . . . if no, proceed to item 18 on page 14.

____ b. Yes . . . if yes, please complete the remainder of this instrument.

6. What were the intended educational outcomes for implementing cluster programs? [Check all that apply.]

_____ a. Occupational awareness

_____ b. Occupational exploration

_____ c. Occupational preparation

_____ d. Basic academic skill development

_____ e. Basic occupational skill development

_____ f. Advanced occupational skill development

_____ g. Other _____

7. What types of support are provided by state level personnel to those individuals responsible for implementing a cluster program? [Check all that apply.]

_____ a. Consultation

_____ b. Curriculum

_____ c. Funding

_____ d. Inservice activities

_____ e. Other _____

_____

8. List the names of the Trade and Industrial Education/Technical Education cluster programs offered in your state and indicate by placing an "X" on the appropriate blank whether the clusters are active at the junior high or middle school (JH) level, the secondary (SEC) level, or the postsecondary (PS) level. [Mark all that apply for each cluster named.]

	Name of Cluster Program	JH	SEC	PS
a.	_____	____	____	____
b.	_____	____	____	____
c.	_____	____	____	____
d.	_____	____	____	____
e.	_____	____	____	____
f.	_____	____	____	____

g. _____|____|____|____|

h. _____|____|____|____|

i. _____|____|____|____|

j. _____|____|____|____|

k. _____|____|____|____|

9. How do the results of cluster programs offerings compare with those of traditional occupational preparation programs? [Check all that apply.]

____ a. Prepare students for greater success in more employment settings

____ b. Result in greater job placement (higher employment) rates

____ c. Have greater employer support

____ d. Result in greater student interest and/or acceptance

____ e. Provides better support for the processes through which individuals make occupational or career decisions

____ f. Provides better preparation of the individual to work in a rapidly changing labor market

____ g. Provides better support for the concept that continuous education [lifelong learning] is an important component in the career ladder of many individuals

____ h. Other _____

_____

_____

_____

10. Is there a difference between the purpose(s) of the same or similar clusters at the secondary and postsecondary levels? [Check only one response.]

____ a . No . . . if no, proceed to item 11.

____ b. Yes . . . if yes, please explain how the purpose(s) differ(s) in the space below.

11. Using the Likert scale shown below, indicate by placing an "X" at the appropriate place on the horizontal line the level of acceptance of cluster programs which has been shown by educators (i.e., vocational and technical instructors, vocational directors, principals) in your state. [Mark only one point.]

|_____|_____|_____|_____|_____|_____|

High Low

12. Using the Likert scale shown below, indicate by placing an "X" at the appropriate place on the horizontal line the level of acceptance of cluster programs which has been shown by industry personnel. [Mark only one point.]

|_____|_____|_____|_____|_____|_____|

High Low

13. What relationship is established or being established between/among cluster programs in Trade and Industrial Education and/or Technical Education and programs such as Applied Academics, School-to-Work, and Technology Education? [Check all that apply.]

____ a. Completion of a Technology Education program is recommended as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.

____ b. Completion of a Technology Education program is required as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.

____ c. Completion of an Applied Academics program (i.e., *Applications in Biology/Chemistry, Applied Communication, Applied Mathematics, Principles of Technology*) is recommended as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.

____ d. Completion of an Applied Academics program (i.e., *Applications in Biology/Chemistry, Applied Communication, Applied Mathematics, Principles of Technology*) is required as a prerequisite for one entering a cluster Trade and Industrial or Technical Education program.

____ e. It is recommended that cluster Trade and Industrial or Technical Education programs be included as one component of the state's School-to-Work system.

____ f. It is required that cluster Trade and Industrial or Technical Education programs be included as one component of your state's School-to-Work system.

____ g. No relationship has been established.

____ h. Other _____

_____

14. Does the state agency responsible for the supervision of Trade and Industrial or Technical Education programs in your state support or encourage the development of junior high or middle school cluster programs? [Check only one response.]

____ a. No . . . if no, proceed to item 15.

____ b. Yes . . . if yes, please indicate the types of support or encouragement provided below. [Check all that apply.]

____ (1) Consultation

____ (2) Curriculum

____ (3) Funding

____ (4) Inservice activities

____ (5) Other _____

_____

15. What criteria are used for selecting, preparing, and/or licensing (including certifying or credentialing) cluster program instructors? [Check all that apply.]

____ a. Must possess a high school diploma or GED.

____ b. Must possess an associate's degree.

____ c. Must possess a baccalaureate degree.

____ d. Must have occupational experience in one of the employment areas for which students are being prepared for employment.

____ e. Must have occupational experience in two or more of the employment areas for which students are being prepared for employment.

____ f. Must have passed a written assessment related to the vocational/technical content area in which he/she is to teach.

____ g. Must have passed a performance assessment related to the vocational/technical content area in which he/she is to teach.

____ h. Must possess a license, registration, or certification from a government or other qualified agency representing the occupation or occupational group.

____ i. Other _____

16. Using the Likert scale shown below, indicate by placing an "X" at the appropriate place on the horizontal line the level of acceptance of secondary cluster programs which has been shown by postsecondary program personnel. [Mark only one point.]

|_____|_____|_____|_____|_____|_____|

High Low

17. Indicate the levels through which program articulation has been established. (Check all that apply.)

_____ a. No articulation has been established.

_____ b. Two-year with four-year postsecondary institutions

_____ c. Secondary with two-year postsecondary institutions

_____ d. Junior highs or middle schools with secondary institutions

_____ e. Elementary schools with junior highs or middle schools

_____ f. Pre-elementary schools with elementary schools

_____ g. Other _____

_____

_____

_____

18. Though a copy of the final report will be submitted to ERIC, would you like to receive a copy of the executive summary of the completed research report. It should be available for mailing not later than September 1, 1996. (Check only one response.)

_____ a. No . . . I don't want to receive a copy of the summary.

_____ b. Yes . . . please send a copy to me at the address used for mailing the instrument.

_____ c. Yes . . . please send a copy to me at the address below.

Name: _____

Address: _____

_____

19. If you would be willing to provide additional information to clarify some of your responses, please provide the following information.

Name: _____
(if not provided in item 18)

Telephone Number: _____

FAX Number: _____

E-mail Address: _____

20. Comments

Thank you for completing this instrument. Please staple the booklet closed and drop it in the United States mail.

Reference

Dykman, A. (1995, November/December). Career education gets a fresh look. Vocational Education Journal, 6.

BEST COPY AVAILABLE

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BEST COPY AVAILABLE

Appendix B

Letters Which Accompanied the Instrument Titled
National Study of State Supervisors on the
Implementation of Cluster Programs in
Trade and Industrial Education and/or
Technical Education Programs

DRAFT*

January 7, 1995

Dear Educator:

We need only a few minutes of your time. We are conducting a research study regarding the use of cluster programming for Trade and Industrial/Technical Education in the public schools throughout the United States. The results of the current study will be used in assessing the impact which cluster programming has had and in determining whether cluster programming should be widely implemented in such Colorado programs.

You are the most important ingredient in this study because of your position and level of knowledge concerning what is taking place in your state/program. With your help, we can obtain data that can be used in identifying the impact which cluster programming has had. The results of this study will be made available to Colorado Trade and Industrial and Technical Education educators to serve as a basis for determining whether they should recommend implementation of cluster programming and if so, what criteria for implementation they would recommend. In addition, the results of the study will be made available to educators nationwide so that they might be better prepared to make recommendations about the implementation of cluster programming.

While we are aware of your busy schedule, we ask that you please help by completing the enclosed instrument and returning it in the self-addressed, stamped envelope within two weeks of receiving this package. If we have not received a response from you within that time frame, we will attempt to contact you again as your input will be valuable to our effort.

The instrument enclosed has a number placed on it in the upper right corner. We want to assure you that this is for follow-up purposes only and that your responses will be held in strict confidence. No individual's responses will be reported--only grouped data will be published.

Thank you for your cooperation. If you have any questions, please contact one of us at the telephone numbers listed below.

Sincerely,

* Actual letter was not available for inclusion in this report.

Colorado State University

School of Education
Fort Collins, Colorado 80523-1588

March 25, 1996

Dear :

Several weeks ago you should have received a survey instrument from Jerry Atkinson, Program Manager for Trade and Industrial Education in Colorado. The survey is part of a study of the implementation of cluster programs in Trade and Industrial and Technical Education across the United States.

We are conducting the study for Dr. Atkinson. We have not received the completed survey from you so we are asking for your assistance in completing the enclosed survey instrument. Please take time to complete the survey and return it to us. Your input is very important and will help us obtain a better picture of what is occurring with cluster programs throughout the United States.

After you have completed the survey, please staple the booklet closed and mail it to us. We thank you for your efforts and contribution to this study.

Sincerely,

Duane Jansen
Professor

Wiley Lewis
Associate Professor

Enclosure

Appendix C

Colorado Vocational Directors' Perceptions
of the Implementation of Cluster Programs
in Vocational/Technical
Education Programs

School ID _____

Colorado Vocational Directors' Perceptions of the Implementation of Cluster Programs in Vocational/Technical Education Programs

School of Education
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Fort Collins, CO 80523-1588
Voice (970) 491-5160
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in cooperation with
Colorado Community College and Occupational Education System
1391 North Speer Boulevard, Suite 600
Denver CO 80204-2554

April 12, 1996

Directions

This instrument is designed to collect information relative to the utilization of cluster programs in vocational and technical education throughout Colorado. You are asked to assist us by completing this instrument which will probably require about twenty (20) minutes of your time. Your response is important in this endeavor as only selected program administrators are being asked to respond and information regarding each potential respondent's site is needed to determine the perceptions of Colorado vocational directors. The results will be used at the state level in planning future programmatic efforts in Colorado.

You may be assured that your response will be treated with confidentiality. This instrument has a School ID assigned for mailing purposes only. This is so we might check you off the mailing list when the completed instrument is returned or for follow-up purposes if no completed form is received. Your name or the name of the school/school district which you represent will not be placed on the instrument and all results will be reported as derived from an analysis of grouped responses.

If you have any questions about this instrument, contact Dr. Duane Jansen, School of Education, Colorado State University, as noted on the cover of this document.

Please record your responses to the following items. In responding, consider the following definition of a vocational education cluster program.

> A *vocational education cluster program* is defined as a field of study organized around careers with learning activities designed to impact both vocational preparation and basic academic skills so that an individual might choose from among several possible employment opportunities or choose to continue her/his education. (Dykman, 1995)

1. Indicate the level of students who are being served by vocational/technical education programs in your school/school district. [Check all that apply.]

   _____ a. Junior high or middle school

   _____ b. Secondary

   _____ c. Postsecondary

2. Of the level(s) of students identified as being served in **ITEM 1**, indicate which of the student levels you are primarily responsible for in your school/school district. [Check only one response.]

   _____ a. Secondary

   _____ b. Postsecondary

   _____ c. Both secondary and postsecondary

3. During a review of the related literature, it was determined that there was a trend toward providing specific occupational skill preparation at the postsecondary level while instruction at the secondary level was becoming less occupational specific. Using the Likert scale shown below, indicate by placing an "X" at the appropriate place on the horizontal line the extent to which this is taking place in your school/school district.

   |_____|_____|_____|_____|_____|_____|
   In All Programs In No Programs

4. Using the Likert scale shown below, indicate by placing an "X" at the appropriate place on the horizontal line the extent to which you believe this trend--providing specific occupational preparation at the postsecondary level and less occupational specific preparation at the secondary level--will continue to take place in the future in your school/school district.

   |_____|_____|_____|_____|_____|_____|
   High Low

5. Have cluster programs been used for vocational/technical education programs (i.e., agriculture, business, health, etc.) in your school/school district? [Check only one response.]

_____ a. No . . . if no, proceed to **ITEM 6, PAGE 5**

_____ b. Yes . . . if yes, place a check beside the appropriate answer to indicate the level at which vocational/technical education cluster programs have been used. [Check only one response.]

_____ (1) at the secondary level only.

_____ (2) at the postsecondary level

_____ (3) at both the secondary and postsecondary levels.

PROCEED TO ITEM 8, PAGE 6.

6. Indicate the reasons, as you perceive them, why cluster programs have not been implemented in your school/school district? [Check all that apply.]

_____ a. Traditional programs are working fine.

_____ b. Too many resources required to implement cluster programs.

_____ c. Educational personnel are not prepared to make the transition from traditional programs to cluster programs.

_____ d. Educational facilities available will not support cluster programs.

_____ e. Non-educational personnel such as employers do not support this preparation concept.

_____ f. Lack of administrative commitment.

_____ g. Lack of information regarding cluster programs.

_____ h. Other _____

_____

7. Do educational personnel in your school/school district plan to implement vocational/technical education cluster programs within the next two years? (Check only one response.)

_____ a. No

_____ b. Yes

PROCEED TO ITEM 20, PAGE 14

8. What criteria were considered when establishing/organizing vocational/technical education cluster programs in your school/school district? [Check all that apply.]

_____ a. Content commonalties/relationships reflected through an analysis of content (related information) common to a number of otherwise related occupations

_____ b. Skill and worker performance commonalties as reflected by the inclusion of a variety of fundamental mental and manual skills appropriate to each of several occupations

_____ c. A base level of preparation as reflected by the education and training to be experienced by each learner serving as a basis for more in-depth or specialized training to follow in the process of continuous education in a formal educational setting.

_____ d. A base level of preparation as reflected by the education and training to be experienced by each learner serving as a basis for more in-depth or specialized training to follow in the process of continuous education in an informal educational setting.

_____ e. Multiple occupational preparation as reflected by the goal of preparing persons for employment in a number of different occupations related with respect to skills, human requirements, industries using such preparation, and cross-occupational mobility opportunities

_____ f. Job entry preparation as reflected by focusing on enabling an individual to gain entrance into employment and not to develop in-depth trade or occupational competency in a number of related occupations.

_____ g. Availability of qualified educational personnel to operate programs

_____ h. Availability of existing instructional materials from other states or schools/school districts

_____ i. Other _____

9. What were the intended educational outcomes for implementing cluster programs in your school/school district? What were the actual outcomes experienced? [Check all that apply for both categories.]

Intended		**Actual**
_____ a.	Occupational awareness	_____
_____ b.	Occupational exploration	_____
_____ c.	Occupational preparation	_____
_____ d.	Basic academic skill development	_____
_____ e.	Basic occupational skill development	_____
_____ f.	Advanced occupational skill development	_____
_____ g.	Other _____	_____

10. Have cluster programs been used for Trade and Industrial and/or Technical Education programs in your school/school district? [Check only one response.]

_____ a. No . . . if no, proceed to **ITEM 20, PAGE 14.**

_____ b. Yes . . . if yes, please complete the remainder of this instrument

11. List the names of the Trade and Industrial and/or Technical Education cluster programs offered in your school/school district and indicate by placing an "X" on the appropriate blank whether the clusters are active at the junior high or middle school (JH) level, the secondary (SEC) level, or the postsecondary (PS) level. (Mark all that apply for each cluster named.)

	Name of Cluster Program	JH	SEC	PS
a.	_____	___	___	___
b.	_____	___	___	___
c.	_____	___	___	___
d.	_____	___	___	___
e.	_____	___	___	___
f.	_____	___	___	___
g.	_____	___	___	___

h. _____|___|___|___|

i. _____|___|___|___|

12. Using the scale provided on the next page, indicate by circling the appropriate number how you believe the results of cluster program offerings in your school/school district compare to those of traditional occupational preparation programs? (Respond to each item.)

SCALE: 1--Much Greater Than 3-Same As 5--Much Less Than

a.	Prepare students for success in more employment settings	1	2	3	4	5
b.	Result in greater job placement (higher employment) rates	1	2	3	4	5
c.	Have greater employer support	1	2	3	4	5
d.	Result in greater student enrollments	1	2	3	4	5
e.	Provide better support for the processes through which individuals make occupational or career decisions	1	2	3	4	5
f.	Provide better preparation of the individual to work in a rapidly changing labor market	1	2	3	4	5
g.	Provide better support for the concept that continuous education [lifelong learning] is an important component in the career ladder of many individuals	1	2	3	4	5
h.	Result in greater student interest in program	1	2	3	4	5
I.	Result in greater student interest in school	1	2	3	4	5

13. Do you believe there is a difference between the purposes of the same or similar clusters at the secondary and postsecondary levels. [Check only one response.]

____ a. No . . . if no, proceed to **ITEM 14.**

____ b. Yes . . . if yes, please explain how the purposes differ in the space below.

14. Using the Likert scale shown below, indicate by placing an "X" at the appropriate place on the horizontal line the level of acceptance of cluster programs which has been shown by educators (i.e., vocational and technical instructors, vocational directors, principals) in your school/school district. [Mark only one point.]

|_____|_____|_____|_____|_____|_____|
High Low

15. Using the Likert scale shown below, indicate by placing an "X" at the appropriate place on the horizontal line the level of acceptance of cluster programs which has been shown by industry personnel. [Mark only one point.]

|_____|_____|_____|_____|_____|_____|
High Low

16. Using the Likert scale shown below, indicate by placing an "X" at the appropriate place on the horizontal line the level of acceptance of secondary cluster programs which has been shown by postsecondary program personnel.

|_____|_____|_____|_____|_____|_____|
High Low

17. Does your school/school district support or encourage the development of junior high or middle school cluster programs? [Check only one response.]

____ a. No

____ b. Yes . . . if yes, please indicate below the types of support or encouragement provided. [Check all that apply.]

____ (1) Consultation

____ (2) Curriculum

____ (3) Funding

_____ (4) Inservice activities

_____ (5) Other _____

_____

_____

18. What relationship is established or being established between/among cluster programs in traditional Trade and Industrial and/or Technical Education and programs such as Applied Academics, School-to-Work, and Technology Education? [Check all that apply.]

_____ a. Completion of a Technology Education (Industrial Arts) program is recommended as a prerequisite for one entering a cluster Trade and Industrial and/or Technical Education program.

_____ b. Completion of a Technology Education (Industrial Arts) program is required as a prerequisite for one entering a cluster Trade and Industrial and/or Technical Education program.

_____ c. Completion of an Applied Academics program (i.e., *Applications in Biology/Chemistry, Applied Communication, Applied Mathematics, Principles of Technology*) is recommended as a prerequisite for one entering a cluster Trade and Industrial and/or Technical Education program.

_____ d. Completion of an Applied Academics program (i.e., *Applications in Biology/Chemistry, Applied Communication, Applied Mathematics, Principles of Technology*) is required as a prerequisite for one entering a cluster Trade and Industrial and/or Technical Education program.

_____ e. It is recommended that cluster Trade and Industrial and/or Technical Education programs be included as one component of the School-to-Work system.

_____ f. It is required that cluster Trade and Industrial and/or Technical Education programs be included as one component of the School-to-Work system.

_____ g. No relationship has been established.

_____ h. Other _____

19. Indicate the levels through which articulation has been established between the various program levels. (Check all that apply.)

_____ a. Two-year (community college or area vocational school) cluster programs with four-year postsecondary programs

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____ b. Secondary cluster programs with non-cluster two-year postsecondary programs

____ c. Secondary cluster programs with cluster two-year postsecondary programs

____ d. Junior high or middle school programs with secondary cluster programs

____ e. Elementary school programs with junior high or middle school programs

____ f. Pre-elementary school programs with elementary school programs

____ g. No articulation has been established.

____ h. Other _____

20. Though a copy of the final report will be submitted to the Colorado Community College and Occupational Education System (CCCOES) and to ERIC, would you like to receive a copy of the executive summary of the completed research report. It should be available for mailing not later than September 1, 1996. [Check only one response.]

____ a. No . . . I don't want to receive a copy of the summary.

____ b. Yes . . . please send a copy to me at the address used for mailing the instrument.

____ c. Yes . . . please send a copy to me at the address below.

Name: _____

Address: _____

_____

21. If you would be willing to provide additional information to clarify some of your responses, please provide the following information.

Name: _____
(if not provided in **ITEM 20**)

Telephone Number: _____

FAX Number: _____

E-mail Address: _____

22. Comments

Thank you for completing this instrument. Please staple the booklet closed or place it an envelope and drop it in the United States mail.

Reference

Dykman, A. (1995, November/December). Career education gets a fresh look. Vocational Education Journal, 6

Dr. Duane Jansen
School of Education
Colorado State University
204 Education Building
Fort Collins, CO 80523-1588

Dr. Duane Jansen
School of Education
Colorado State University
204 Education Building
Fort Collins CO 80523-1588

Appendix D

Letters Which Accompanied the Instrument Titled
Colorado Vocational Directors' Perceptions
of the Implementation of Cluster Programs
in Vocational/Technical
Education Programs

Colorado Community College & Occupational Education System

1391 North Speer Boulevard, Suite 600
Denver, Colorado 80204-2554
(303) 620-4000
FAX [303] 825-4295

Printed on recycled stock

April 10, 1996

Dear Vocational Director:

A recent issue of the Vocational Education Journal highlighted the movement toward cluster programs in occupational education in the public schools throughout the United States. In a telephone conversation with the editor of the Journal, she indicated that there have not been any national studies conducted to determine the magnitude of the cluster movement within the various states.

Within Colorado, there has been some activity, especially at the secondary level, in establishing cluster occupational programs. I have asked Dr. Duane Jansen and Dr. Wiley Lewis, from the School of Education at Colorado State University to develop a survey under my supervision to determine the level of activity on cluster programs in Colorado and within all of the 50 states.

The purpose of this letter is to ask for your assistance in completing the enclosed survey on Colorado Vocational Directors' Perceptions of the Implementation of Cluster Programs in Vocational and/or Technical Education Programs Questionnaire. I am attempting to determine the status of cluster programs in Trade and Industrial Education and Technical Education, and use the information that is collected to assist program directors in making decisions about the implementation of cluster programs.

Please complete the enclosed instrument and return it to Dr. Duane Jansen at Colorado State University. The instrument has a number on it in the upper right corner. We want to assure you that this number is for follow-up purposes only and that your responses will be held in strict confidence. No individual's response will be reported. Only group data will be reported in the final report.

Thank you for your cooperation. If you have any questions, please contact Dr. Duane Jansen at (970) 491-5160 or Dr. Wiley Lewis at (970) 491-5273.

Sincerely,

Jerry Atkinson

Jerry Atkinson
Vocational Technical Education Manager

JA:sw

ENCLOSURE

A_040996.VD

EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

Colorado Community College & Occupational Education System

1391 North Speer Boulevard, Suite 600
Denver, Colorado 80204-2554
(303) 620-4000
FAX [303] 825-4295

Printed on recycled stock

May 15, 1996

Dear Vocational Director:

I know this is a very busy time of the year for all of us. Yet, I do need your help.

In April, we mailed you a survey to help us with the status of cluster programs in Colorado. I am enclosing a copy of the April 10th letter, so I will not rewrite it. Also, enclosed is a copy of the instrument.

Please complete the survey and mail it back to Dr. Duane Jansen at Colorado State University. Duane's address is right on the cover of the survey.

Thank you for your cooperation in helping us all. We all need to have as good of programs as possible to serve students and our communities.

Sincerely,

Jerry Atkinson

Jerry Atkinson
Vocational Technical Education Manager

JA:sw

ENCLOSURE

A_051596.VD

EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

Appendix E

Table E

State Supervisors Reporting the Names of the Trade and Industrial Education and/or Technical Education Cluster Programs Offered in Their States and the Grade Levels at Which Such Programs Were Offered

Table E

State Supervisors Reporting the Names of the Trade and Industrial Education and/or Technical Education Cluster Programs Offered in Their States and the Grade Levels at Which Such Programs Were Offered (N=20)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Agriculture			1	5.0		
Agribusiness			1	5.0		
Arts and Humanities			1	5.0		
Accounting Technology			1	5.0	1	5.0
Arts, Media, and Communication			1	5.0	1	5.0
Aviation-Air Ways Science			1	5.0		
Building Maintenance			1	5.0		
Business and Marketing			1	5.0		
Business/Information/ Computer Technology			1	5.0		
Business Management and Finance			1	5.0	1	5.0
CAD-CAM			1	5.0	1	5.0
Communication			1	5.0		
Communication Academy			1	5.0		

(table continues)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Communication (continued)						
Communications (Drafting and Graphics)			1	5.0	1	5.0
Communications (Drafting, Commercial Art, Photography, and Graphic Arts			1	5.0		
Communications Technology			1	5.0		
Drafting and Design Technology			1	5.0	1	5.0
Graphic Communications			1	5.0		
Graphic Communications Occupations	1	5.0	1	5.0	1	5.0
Printing			1	5.0		
Visual Communications			1	5.0		
Visual Communication Cluster					1	5.0
Visual Imaging Technology			1	5.0		
Construction			7	35.0	3	15.0
Building Construction			1	10.0		
Building Trades			1	5.0		
Construction (Carpentry, Cabinet Making, Brick and Cement Masonry, and Commercial Buildings)			1	5.0		

(table continues)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Construction (continued)						
Construction Academy			1	5.0		
Construction and Development			1	5.0	1	5.0
Construction/ Building Maintenance			1	5.0	1	5.0
Construction Occupations	1	5.0	1	5.0	1	5.0
Construction Technology			2	10.0		
Construction Technology Cluster					1	5.0
Construction Mechanics			1	5.0		
Consumer Service, Technology			1	5.0		
Consumer Service, Hospitality			1	5.0	1	5.0
Education			1	5.0		
Electricity/electronics			1	5.0		
Electromechanical Technology			1	5.0		
Electronics			3	15.0	2	10.0
Electronic Occupations	1	5.0	1	5.0	1	5.0

(table continues)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Engineering			1	5.0	1	5.0
Engineering and Industrial			1	5.0	1	5.0
Engineering Related Technology			1	5.0	1	5.0
Engineering Technology			1	5.0		
Environmental and Natural Resource Systems			1	5.0	1	5.0
Exploring Technology Systems	1	5.0				
Health			1	5.0		
Health and Biosciences			1	5.0	1	5.0
Human Services			1	5.0		
Human Resource Services			1	5.0	1	5.0
Industrial Maintenance			1	5.0		
Industrial Maintenance Technology			1	5.0	1	5.0
Industrial Mechanics			1	5.0		
Industrial Technology	1	5.0	2	10.0		
Introduction to Trades and Industry			1	5.0		
Maintenance Technology			1	5.0	1	5.0

(table continues)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Manufacturing			3	15.0	2	10.0
Manufacturing, Engineering, and Technology			1	5.0	1	5.0
Manufacturing Occupations	1	5.0	1	5.0	1	5.0
Manufacturing Technology			1	5.0	1	5.0
Manufacturing Technology Cluster			1	5.0	1	5.0
Manufacturing/ Technology			1	5.0		
Metals Manufacturing			1	5.0		
Mechanics			1	5.0	1	5.0
Mechanics and Repairs			1	5.0	1	5.0
Mechanics/Installers/ Repairers Technology			1	5.0		
Media and Communications			1	5.0		
Metals (Machining, Sheet Metal, and Welding)			1	5.0		
Metal Trades			1	5.0		
Metalworking			1	5.0		
Mining			1	5.0		
Office Technology			1	5.0	1	5.0
Personal and Miscellaneous Services			1	5.0	1	5.0

(table continues)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Power Mechanics			1	5.0		
Precision Production Trades			1	5.0	1	5.0
Production Industries Technology			1	5.0		
Public Services			1	5.0		
Public Safety/ Protective Services			1	5.0	1	5.0
Science and Math			1	5.0		
Social Sciences			1	5.0		
Technical/Mechanical Services			1	5.0		
Technical Preparation			1	5.0	1	5.0
Applied Technology			1	5.0		
Exploratory Tech	1	5.0				
Tech Core			1	5.0		
Tech Prep			1	5.0	1	5.0
Technical Cluster			1	5.0		
The Company			1	5.0		
Transportation			2	5.0	1	5.0
Automobile Technician			1	5.0	1	5.0
Automotive Technology			1	5.0		
Collision Repair and Refinishing			1	5.0	1	5.0

(table continues)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Transportation (continued)						
Medium/heavy Truck Technology			1	5.0	1	5.0
Transportation (Auto Mechanics, Diesel, Aviation, Motorcycle)			1	5.0		
Transportation and Energy			1	5.0	1	5.0
Transportation and Material Movers			1	5.0	1	5.0
Transportation/ Material Moving Technology			1	5.0		
Transportation Occupations	1	5.0	1	5.0	1	5.0
Transportation Technology			1	5.0		
Transportation Technology Cluster			1	5.0	1	5.0
Transportation Technologies			1	5.0	1	5.0
Vehicular Mechanics			1	5.0		
Visual and Performing Arts			1	5.0	1	5.0

Appendix F

Additional Comments by State Supervisors Regarding
Trade and Industrial Education and/or
Technical Education Cluster Programs

Additional Comments by State Supervisors Regarding Trade and Industrial and/or Technical Education Cluster Programs

Cluster programs in the transportation area are currently being aligned with NATEF National Skill Standards. The manufacturing cluster is developed from competencies drawn from National Skill Standards, i.e., CAD, electronics, metalworking levels I, II, & III, advanced manufacturing, and hazardous materials.

I completed this instrument because my name was on it. I am not the person best qualified to answer these questions. My answers to some items are mostly my perceptions and are not backed by research or statistics.

My responses to items 11 and 12 would indicate we need more inservice for teachers and more promotions with industry.

Need more business/industry involvement to be successful; need quality marketing from every school

Our technology education courses are offered by cluster: construction related, communications related, etc.

We are in initial stages of cluster development. We have accomplished the following clusters in [state].

- Engineering and Industrial
- Health
- Natural Resources
- Arts and Humanities
- Business and Technology

Examples included from [location] public schools. We now need to:

- Get buy in from counselors.
- Get more support from administrators.
- Most small schools do not have vocational offerings.
- Difficult for them to shift paradigms from college prep to career development.

Would be interested in starting [cluster programs] for [state]; need more ideas.

Appendix G

Table G

Local Vocational Directors in Colorado Reporting the Names of the Trade and Industrial Education and/or Technical Education Cluster Programs Offered in Their Schools/School Districts and the Grade Levels at Which Such Programs Were Offered

Table G

Local Vocational Directors Reporting the Names of the Trade and Industrial Education and/or Technical Education Cluster Programs Offered in Their Schools/School Districts and the Grade Levels at Which Such Programs Were Offered

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Agriculture	1	4.0	3	12.0	2	8.0
Agriculture Education						
Agriculture Industrial Mechanics			1	4.0		
Applied Technology			1	4.0		
AVP Program			1	4.0		
Bio/Health Technology			2	8.0	1	4.0
Bio Tech						
Business	2	8.0	5	20.0	4	16.0
Business Education Office Occupations						
Child Care			1	4.0	1	4.0
Communications			2	8.0		
Construction Technology			1	4.0	1	4.0
Consumer and Family Studies	1	4.0	1	4.0		
Criminal Justice					2	8.0

(table continues)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Culinary Arts	1	4.0	1	4.0	1	4.0
Electronics			1	4.0	1	4.0
EMT			1	4.0	1	4.0
Engineering and Technical Services Engineering Engineering and Technology Engineering Technology Cluster			6	24.0	2	8.0
Environmental Technology Environmental Tech Environment/Alternate Energies			2	8.0	2	8.0
Health Health Academy			4	16.0	1	4.0
Human Services			1	4.0	1	4.0
Industrial Arts			1	4.0		
Industrial Design Technology					1	4.0
Information Management			1	4.0	1	4.0
Instrumentation Technology					1	4.0
Manufacturing Technology Manufacturing			4	16.0	2	8.0

(table continues)

Cluster Name	Grade Level					
	Junior High		Secondary		Postsecondary	
	f	%	f	%	f	%
Mechanical Technology Mechanical			1	4.0	1	4.0
Multimedia Technology					1	4.0
Pre-engineering	1	4.0	2	8.0	1	4.0
SBA					1	4.0
Technical Occupations	1	4.0	1	8.0		
Technology Education	1	4.0				
TPAD			1	4.0		
Transportation Technology			5	20.0	2	8.0
Auto Mechanics Automotive Industry Technologies (Automotive Technology, Auto Collision Repair, Diesel Power Mechanics) Transportation						

Appendix H

Additional Comments by Local Vocational Directors in Colorado
Regarding Trade and Industrial Education and/or
Technical Education Cluster Programs

Additional Comments by Local Vocational Directors in Colorado Regarding Trade and Industrial and/or Technical Education Cluster Programs

A pendulum swings from one side to the other and back again--except today it swings much faster than ever in history. Cluster programs, at all levels, provide a greater opportunity to develop both the depth and breadth of knowledge needed to prevent unemployability when job changes become necessary.

Given the interest and direction, why [do vocational administrators] in "some" areas . . . have a problem with funding (program approval)?

I truly believe this to be a fantastic opportunity . . . However, it has been my experience with [some agencies] that a strong resistance to this type of change exists.

It is difficult for me to properly address most sections in this survey.

One dilemma for us in using a cluster approach in the Automotive area is providing accurate year-end information . . . Students are enrolled in three different vocational programs during the year. By the end of the year, they cannot be considered "completers" of any of the three vocational programs. Our statistics in cluster programs do not look like we are successful when we have a majority of non-completers.

Our cluster programs are used with vocational agriculture and business courses.

Process of application too complicated--time constraints--use grandfather clause for existing programs

Some of the T&I programs have become involved in cluster activities but many have not. Th it was somewhat difficult to answer yes or no.

Teaching general vocational courses to all students will, in my opinion, take a program that has worked well for years and cause its decline. General education has, in the mind of the public, tended to fail miserably because of its shotgun methods. A student on the bottom half cannot see how what he is learning is to his benefit. The result is the high dropout rate. Vocational education will begin to suffer the same fate.

There is strong support for the cluster approach (passpoints are being strongly considered). Answered NO because in my opinion it will take more than two years to implement.

[This] is my first year as vocational director for our district. This responsibility is only one several included in my job description. I am unfamiliar with the cluster concept but would like to know more about it since it is obviously a trend in vocational ed.

This may be a new concept, but I am not very familiar with it. I am looking forward to learning more about it.

This type of information has not been introduced to my staff as a whole. The terms vocational education cluster program was new to nearly all of us. We understand each word independently but didn't know the interpretation of the words combined. My staff and I believe in Vo-Tec; we just need some inservice.

We are working with . . . and . . . partnership to develop our School-to-Career School Changes. . . . and . . . [are] working together to develop shared clusters. This is a major step to offer more educational opportunities to our students.

We offer a multi-occupational vocational program (one class) plus a career exploration class--9th grade now but will be required of 11th grade in the future.